HAWK INDUSTRIES, INC.

HAWKJAW

OPERATION, MAINTENANCE

AND

SERVICE MANUAL

MODEL 100K-2GSR

Serial # 128-130

HAWK INDUSTRIES, INC.

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Introduction

Hawk's design philosophy is simple: Design with the end user in mind. Make it tough, dependable and easy to maintain.

Hawk has designed the HawkJaw with this same simple formula.

FEATURES

The HawkJaw 100K-2GSR is a hanging unit that will spin, make up and break out drill pipe. It is revolutionary because the tool spins and makes up drill pipe or breaks out and spins drill pipe in 12 seconds or less. A patented self-energized grip system provides consistent torque values to the drill string. Consistent torque ensures that wash outs and "post tightening" down hole do not occur under normal conditions.

A patented adjustable wrench system eliminates the need for separate jaws, spinning wrench rollers or gripping dies. The HawkJaw's modular design enables the unit to be maintained on the rig floor.

SAFETY

The HawkJaw 100K-2GSR provides a fast, safe and efficient method of spinning and make up or break out and spinning. It eliminates costly and dangerous spinning chain and rig tong accidents.

TIME AND LABOR SAVINGS

The HawkJaw improves trip time over any comparable torquing and spinning device in the industry. The unit easily adapts to any land or offshore rig because it hangs in the derrick. Handles mounted near the control buttons enable one rig hand to move the hanging unit on and off the pipe.

Control buttons are used to grip, torque and spin drill pipe. Drillers and operators of the HawkJaw 100K-2GSR work more efficiently and suffer less fatigue on long round trips. The unit saves trip time because the HawkJaw breaks out and spins in 12 seconds or less, and makes up and spins in 10 seconds or less. Crew fatigue is reduced, pipe is properly torqued and the work is efficient.

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Warranty

HAWKJAW 100K-2GSR
STANDARD WARRANTY AND FIELD SERVICE

Your Hawkjaw must be free of material and workmanship defects for a period of six months from the date of delivery. If any items fail because of a manufacturing defect within that period of time, that item will be replaced by Hawk Industries. Hawk Industries at its discretion may extend this warranty period.

Replacement of parts will be accomplished either at the factory or at a designated service point. This guarantee does not include the replacement of parts where failure occurred due to normal wear and tear or misuse of the tool. Defective parts must be inspected by Hawk Industries, at its Long Beach plant, before warranty can be honored. Customer must obtain an RGA# (Return of Goods Authorization) from the California, USA factory.

Hawk Industries' liability is limited to replacement of defective parts only and does not include the cost of labor, communications, transportation or handling connected with the replacement of such parts.
Hawk Industries will in no event be liable for consequential damages or contingent liabilities arising out of the failure of any parts to operate properly.

No expressed, implied or statutory guarantee other than herein set forth is made or authorized to be made by Hawk Industries.

CAUTION

Factory specifications for hydraulics, pneumatics, lubricants, adjustments and safety precautions as set forth in the operation and maintenance manual are for the mutual protection of the owner of the HawkJaw 100K-2GSR and the company. Failure to adhere to these specifications can reduce the efficiency or life of the equipment and/or cause bodily injury.

Warning

The Hawkjaw includes specially modified valves, fasteners and other components for extreme environments and service. Any attempt to substitute standard components could reduce reliability and performance, void the warranty and/or cause bodily injury. Any modification made by any third party without express written consent of Hawk Industries Inc. shall nullify the existing standing warranty.

Specification Sheet

DIMENSIONS

DEPTH: 58 in.
WIDTH: 50 in.
HEIGHT: 100 in.

PERFORMANCE AND POWER REQUIREMENTS

TORQUE:	100,000 ft. lbs.
MAXIMUM PIPE ROTATION:	50 degrees
WRENCH SIZE RANGE:	4" – 9 1/2" OD tool joints
SPINNER SIZE RANGE:	3" – 9 1/2" OD tube
AIR POWER SOURCE:	100 psi @ 2-10 cfm
HYDRAULIC POWER SOURCE:	2,600 psi @ 20-35 gpm
HYDRAULIC POWER SOURCE TYPE:	Closed Center System (Optional Open/Closed Center)
WEIGHT:	3,700 lbs.
GRIP, SPIN, MAKE UP & RESET CYCLE TIME:	10 sec. or less
GRIP, BREAK OUT, SPIN & RESET CYCLE TIME:	12 sec. or less

Ordering Instructions

All parts must be **ordered by** giving the **quantity needed**, the full **part number** as listed in this manual under Part #, the unit **serial number**, the **model number** and **part name**.

Example

Quantity	Part #	Serial #	Model #	Part Name
2	061-20194	01	100K-2GSR	Die
3	061-H18	01	100K-2GSR	Grip Cylinder
1	031-25CHAIN	01	100K-2GSR	Chain

Hanging Cable Location

1. Anchor the hanging cable to a point as close to the derrick crown as possible. The longer the hanging cable, the easier the HawkJaw is to move on and off the drill pipe.
2. **Locate** the **cable hang point** as **high above** the center of the rotary table as possible. The cable must hang within 2'-3' ft. of the **rotary table center**.

NOTE

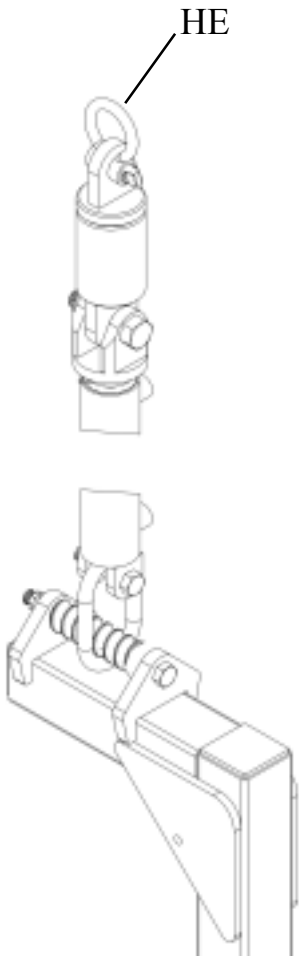
The hanging cable must permit the HawkJaw to move from the drill pipe connection to the mouse hole connection to the HawkJaw rest position (3'- 5' ft. away from the rotary table).

HawkJaw Location

1. **Place** the HawkJaw on the **side** of the **rotary table** away from the **setback zone**. This allows the **drill pipe stands** to **swing straight** from pick-up to stabbing.
2. If possible, **place** the HawkJaw on the **opposite** side of the **setback zone**. If the rig has dual setback zones, Step 1 applies.
3. The HawkJaw may **rest** on the **rig floor 3' -5' ft. away** from the **rotary table**.

Hanging Cable Requirements

1. **5/8" diameter steel cable**.
2. Appropriate **hanging cable hardware** for **5/8"** diameter steel cable.
3. **Enough** cable **length** to **suspend** the **Hanger Eye** (HE) **20' ft. above** the **rig floor**.
4. **Enough** cable **length** to **allow** the HawkJaw to **rest** on the rig floor 3'- 5' ft. away from the rotary table with the lift cylinder completely stroked out. The lift cylinder is 13' ft. long when completely stroked out.



Hydraulic Requirements

1. **Pressure compensated pump** set to pressure compensate at **2500 psi**.
2. **Minimum** volume of **20 gpm**. **35 gpm** for **top performance**.
3. **1" minimum Pressure line**. **1 1/4" Pressure line** if the **power unit** is located **more than 100' apart** from the HawkJaw. The **hose working pressure** must be **3000 psi or greater**.
4. **1 1/4" minimum Tank line**. **500 psi minimum hose working pressure**.
5. Hawk approved **quick disconnects** [Male: Part # 061-H52 (MQD). Female: Part # 061-H53 (FQD)]. Initial quick disconnects supplied with the HawkJaw.
6. Hydraulic power unit **located** in a **clean, dry, ventilated area**.
7. **Enough slack** in the lines for the HawkJaw to **move** from its **rest position** to the **drill pipe connection** to the **mousehole connection**.

WARNING

The HawkJaw is a **closed center system** which **must have** a **pressure compensated volume controlled** power unit. If the only available hydraulic power unit is **constant volume**, then the **optional hydraulic converter kit** (Part # 061-J80) is required. Running the HawkJaw with a **constant volume** hydraulic power unit may result in **bodily injury** and will cause **damage** to the **HawkJaw** and to the **hydraulic power unit**.

WARNING

The HawkJaw must receive **clean hydraulic fluid**. Running the HawkJaw without a Hawk approved filter (Part # 061-H25) and installed filter element (Part # 061-H25A) voids the warranty and severely shortens component life.

Air Requirements

1. **Clean, dry air** at **100 psi** @ a negligible volume.
2. **On-board auto-dump air filter** (Part # 061-A22). **Initial on-board filter** (OF) **supplied with** the **HawkJaw**.
3. **Auto-dump air filter** (Part # 061-J29) located between the air source and the HawkJaw air supply line (A). **Initial in-line filter supplied with** the **HawkJaw**.
4. **Enough slack** in the line for the HawkJaw to **move** from its **rest position** to the **drill pipe connection** to the **mouse hole connection**.

WARNING

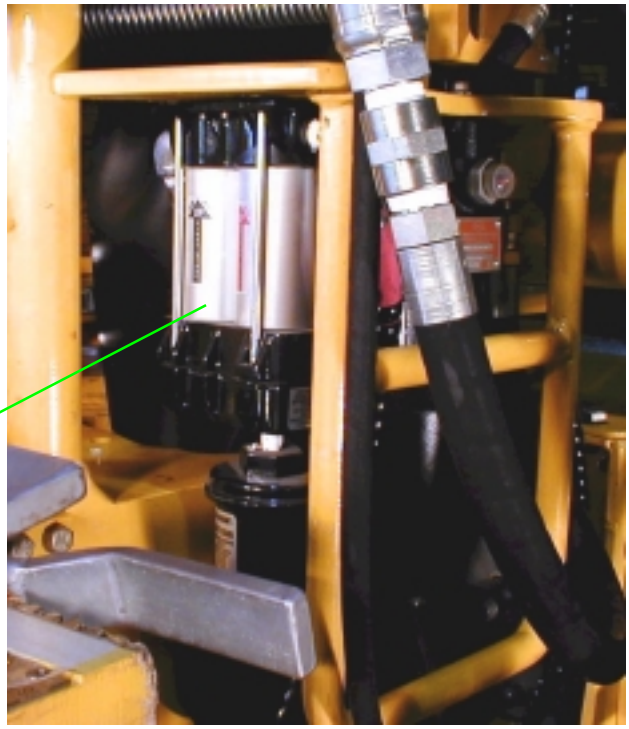
The HawkJaw must receive **clean, dry air**. Running the HawkJaw without a Hawk approved air filter (Part # 061-J29) voids the warranty and shortens component life.

NOTE

Make sure the larger air filter (Part # 061-J29) is mounted vertically with the red and black arrows on the cannisters pointing up.

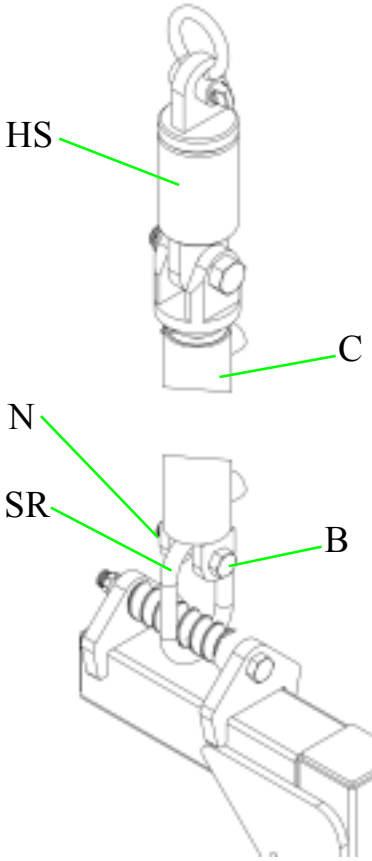
NOTE

The smaller air filter (OF) is located on board the HawkJaw. (Part # 061-A22)



Raise/Lower Cylinder Hook - Up

1. Use the **Raise/Lower cylinder Cap** side **Bolt** (B) to **connect** the HawkJaw **Suspension Ring** (SR) to the **Raise/ Lower cylinder** (C).
2. Use the Raise/Lower cylinder Cap side **Lock Nut** (N) to **secure** the Raise/Lower cylinder Cap side **Bolt** (B).
3. **Connect** the **Hanger Swivel** (HS) to the **hanging cable**.
4. **Connect** the **HawkJaw Rod side** (HR) and **Cap side** (HC) hydraulic **Leader hoses** to the Raise/Lower cylinder Rod side (RR) and Cap side (RC) hoses. The **HawkJaw Rod side** (HR) **Leader hose** Quick Disconnect is **male**.



NOTE

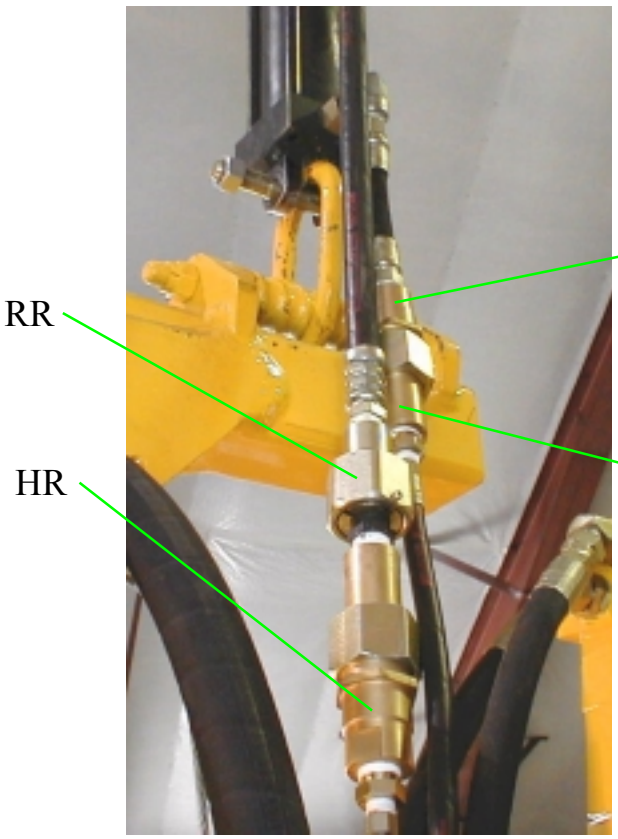
Make sure the **rod side** of the Raise/Lower cylinder (R) **connects** to the **hanging cable**.

NOTE

Tightly connect the **quick disconnects**. A loose connection causes a pressure drop in the hydraulic fluid which heats up the fluid and reduces component life. A loose quick disconnect may also stop cylinder movement.

NOTE

Use only Hawk approved quick disconnects.



Part Numbers

Part Name	Part #
Male Quick Disconnect (HC, RR)	061-H26M
Female Quick Disconnect (RC, HR)	061-H26F

Winch Hook - Up

1. **Connect** the air power source with the **Air** (A) line.
2. Make sure the hydraulic **reservoir** is **full**.
3. **Connect** the hydraulic **Pressure** (P) and **Tank** (T) lines. The **Pressure line** (P) Quick Disconnect is **male**.
4. Make sure the **"E" stop** (E) is **pulled out**.
5. **Check** for hydraulic **leaks**. If leaks occur, see Trouble Shooting.
6. With the exception of the hooks retracting, **no motion** should occur. If any other parts on the HawkJaw move, see Trouble Shooting.

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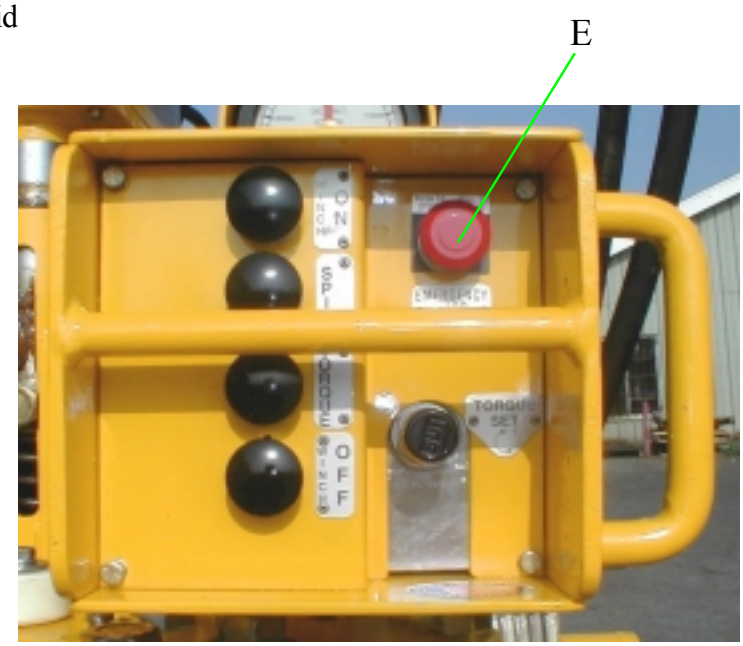
NOTE

Tightly connect the **quick disconnects**. A loose connection causes a pressure drop in the hydraulic fluid which heats up the fluid and reduces component life.

NOTE

Use only Hawk approved quick disconnects.



Part Numbers

Part Name	Part #
Male Quick Disconnect (P)	061-H52
Female Quick Disconnect (T)	061-H53
Male Air Quick Disc. (A)	061-A12M
Female Air Quick Disc.	061-A12F

Winch Hook - Up

7. **Center** the **Suspension Ring** (SR) on the Lateral tilt screw (LTS).
8. Use **Raise** (R) to raise the HawkJaw 1'- 2' ft. off the rig floor.
9. **Use** the **Control Handles** (CH) on both Control Panels and **Raise** (R) **and Lower** (L) to **position** the **HawkJaw middle wrench** (MW) **near** the **drill pipe shoulder** (S) location.

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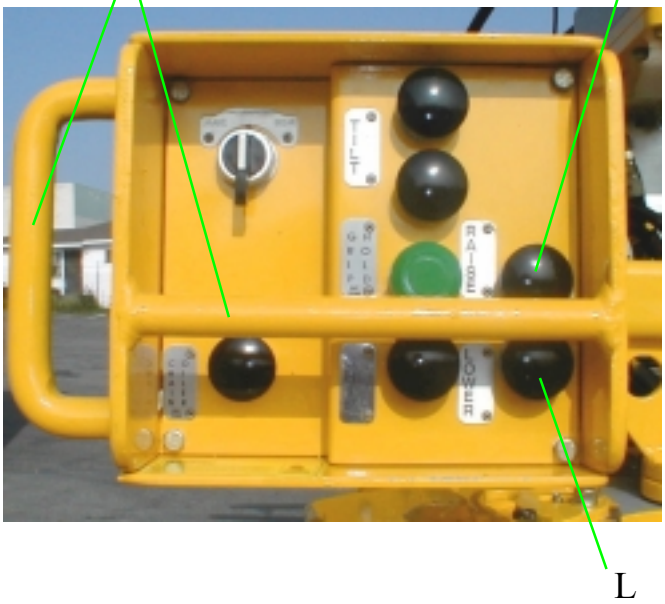
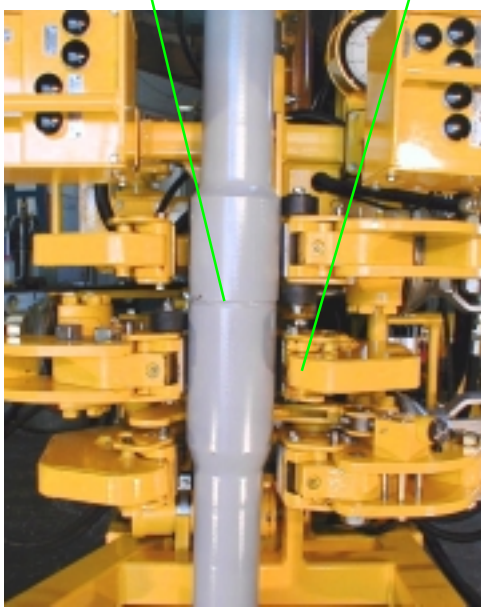
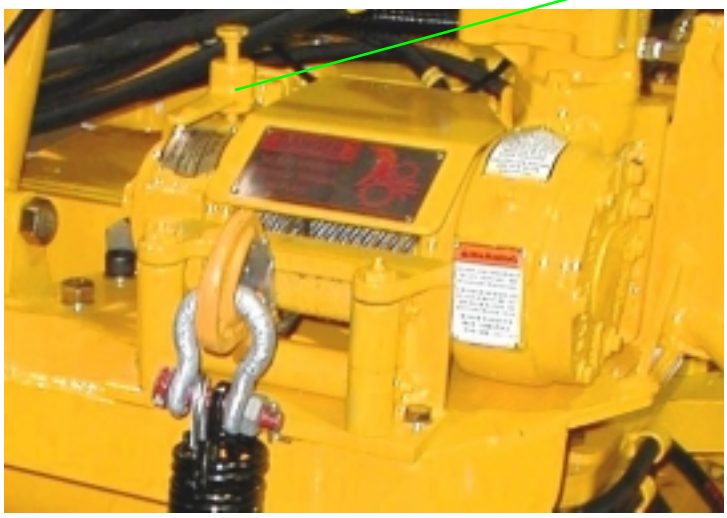




Winch Hook - Up

10. **Disengage** the **Winch Clutch** (C). **Spool out** enough **line** to anchor the Winch Cable Spring Shackle (S) to a structural point on the derrick.
11. **Anchor** the **Winch Cable Spring Shackle** (S) **to** a structural point on the **derrick**. Make sure there is enough slack in the line to enable the HawkJaw to move onto the drill pipe connection.
12. **Engage** the **Winch Clutch** (C).
13. Use **Winch Off** (WOff) **to pull** the HawkJaw 3' to 5' ft. **away from** the **wellbore**. This allows the **drill pipe stands** to **swing straight** from pick-up to stabbing.



IMPROVED

Winch Cable Spring improves overall winch performance and eliminates excess tension while making up drill pipe.

Start-up Procedure

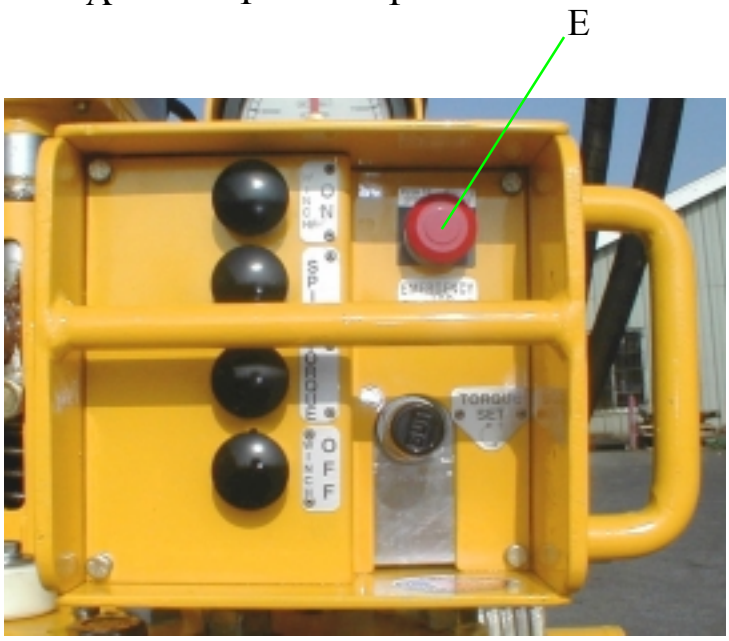
1. **Connect** the air power source with the **Air** (A) line.
2. Make sure the hydraulic **reservoir** is **full**.
3. **Make sure** the hydraulic **Pressure** (P) and **Tank** (T) lines are connected. The Pressure line (P) Quick Disconnect is male.
4. Make sure the **"E" stop** (E) is **pulled out**.
5. **Check** for hydraulic **leaks**. If leaks occur, see Trouble Shooting.
6. With the exception of the hooks retracting, **no motion** should occur. If any other parts on the HawkJaw move, see Trouble Shooting.

NOTE

Tightly connect the **quick disconnects**. A loose connection causes a pressure drop in the hydraulic fluid which heats up the fluid and reduces component life.

NOTE

Use only Hawk approved quick disconnects.



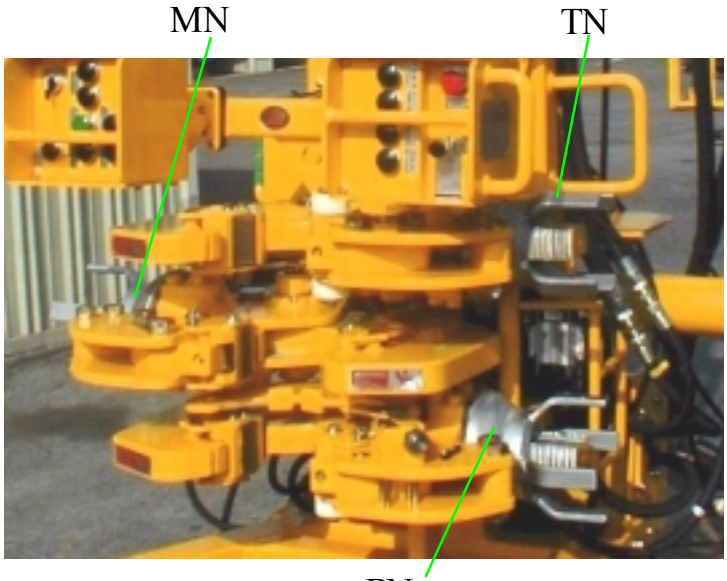
Part Numbers

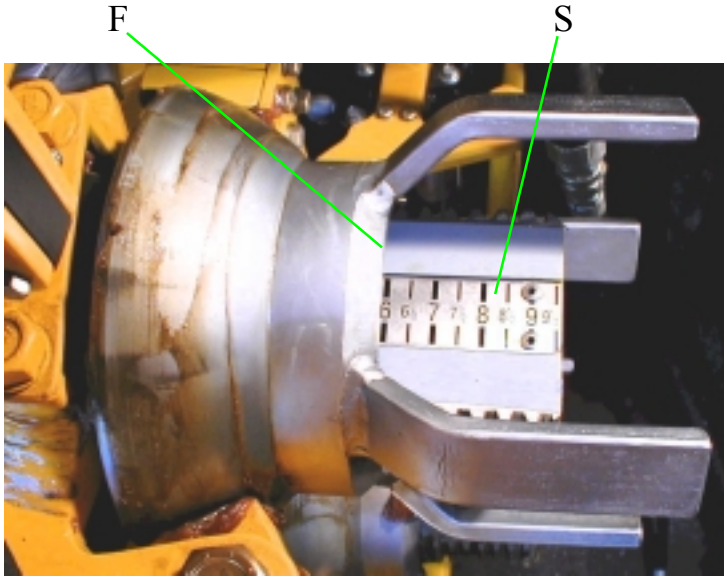
Part Name	Part #
Male Quick Disconnect (P)	061-H52
Female Quick Disconnect (T)	061-H53
Male Air Quick Disc. (A)	061-A12M
Female Air Quick Disc.	061-A12F

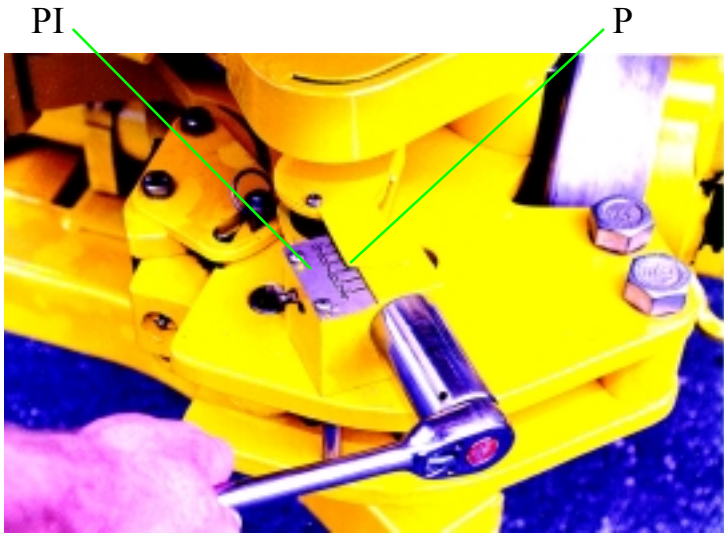
Adjust for Make Up

Adjusting the Wrenches

1. **Measure** the **tool joint** with OD calipers.
2. Use the 1 1/4" wrench to **adjust** the **Pointer** (P) on the **Pipe stop index** (PI) to the **OD** tool joint **size**. Its always better to **adjust** the **pointer 1/4" larger** than the **measured diameter** of the **tool joint**.
3. For safety, **adjust** the **Bottom wrench nut** (BN) **1" larger** than the Top wrench nut (TN) and Middle wrench nut (MN).
4. **Rotate** the **Top wrench nut** (TN) and the **Middle wrench nut** (MN) to the **OD** tool joint **size**. Visually **align** the end **face** (F) of the wrench nut with the **scale** (S) on the wrench.







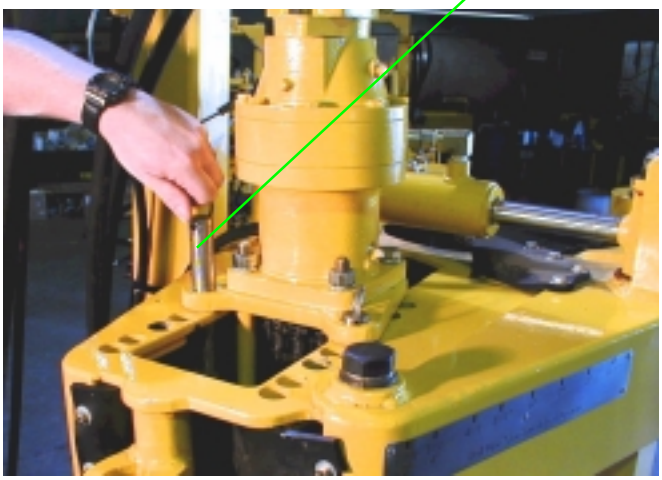
Shown set for 6" OD tool joint

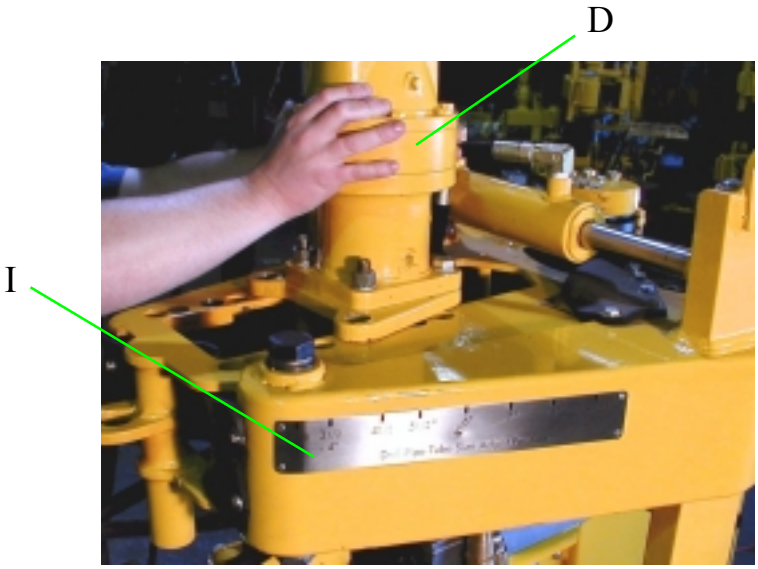
Shown set for 6 " OD tool joint

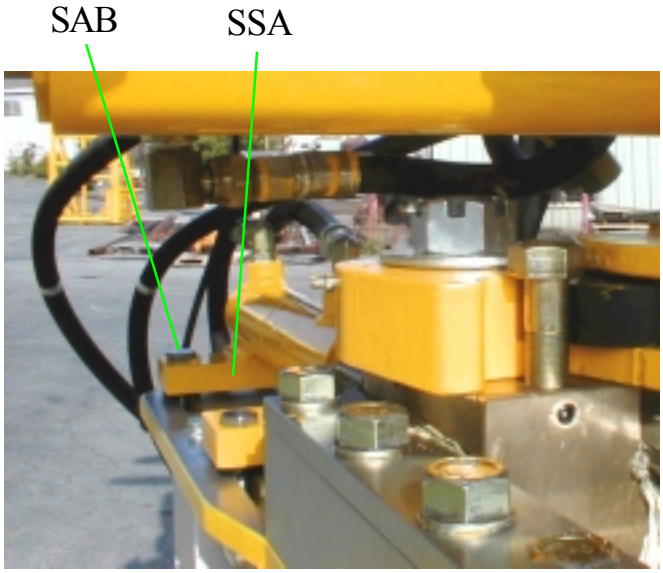
Adjust for Make Up

Adjusting the Spinner

1. **Measure** the drill pipe **tube** with OD calipers.
2. **Remove** the **quick release** pins (QR).
3. **Slide** the whole **Drive unit** (D) **forward or backward** to the appropriate holes. Use the **pipe size index** (I) to adjust the drive unit to the correct setting.
4. **Replace** the **quick release** pins (QR).







NOTE

Spinner performance could be reduced if the spinner push cylinder stroke is insufficient to allign the spinner correctly with the drill pipe, especially on sizes above 5 1/2" tube. To correct this problem:

1. Loosen the four spinner slide assembly bolts (SAB).
2. Re-adjust the spinner slide assembly (SSA) forward so that the push cylinder strokes out far enough to reach the connection.
3. Tighten the spinner slide assembly bolts (SAB).

Position for Make Up

1. Stab the drill stand.
2. **Center** the **Suspension Ring** (SR) on the Lateral tilt screw (LTS).
3. Push and hold down Winch On (WOn) to **move** the **HawkJaw onto** the **drill pipe connection**.
4. Use Raise (R) and Lower (L) to **center** the Top wrench dies (TD) and the Middle wrench **dies** (MD) **between** the **shoulder** (S).
5. Keep the **Middle** wrench **dies** (MD) **away** from the **Hard banding** (HB).
6. Keep the **Top** wrench **dies** (TD) and **Middle** wrench **dies** (MD) **away** from the **shoulder** (S).

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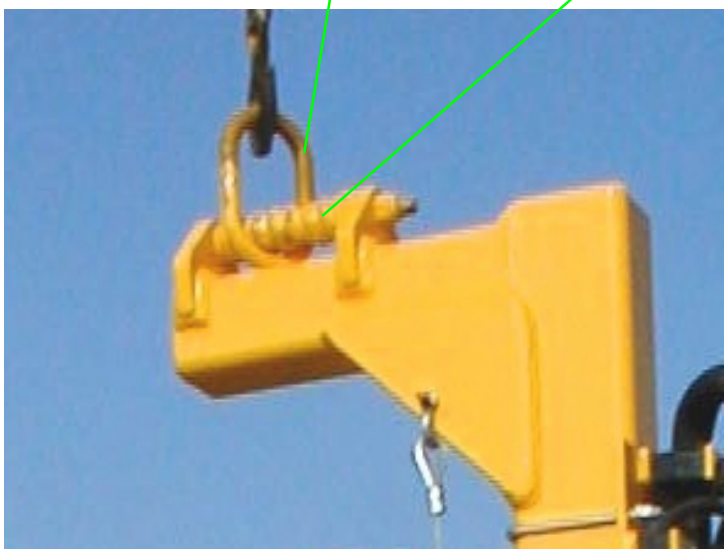
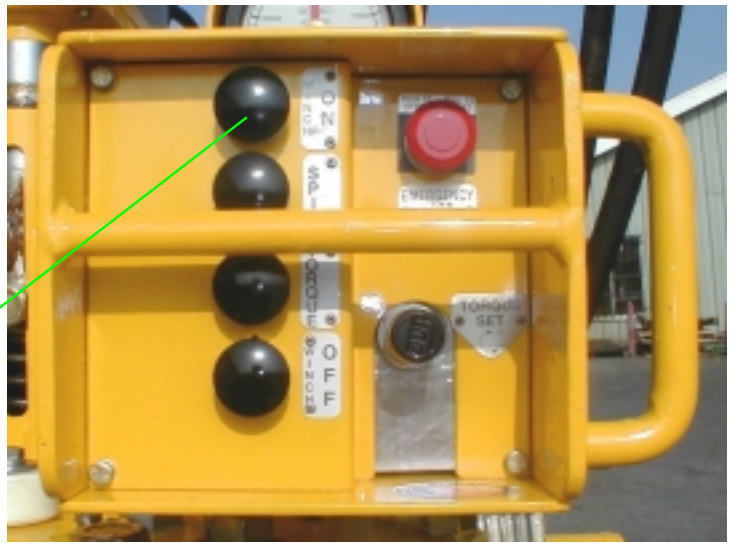
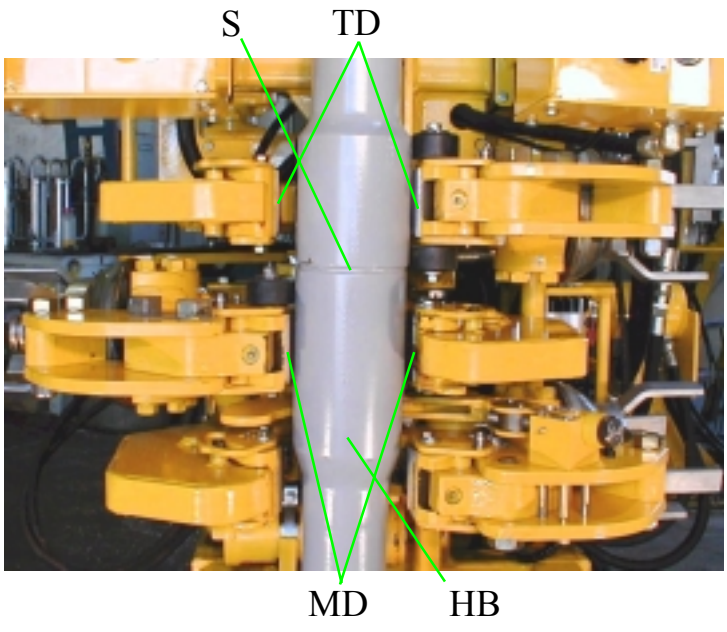
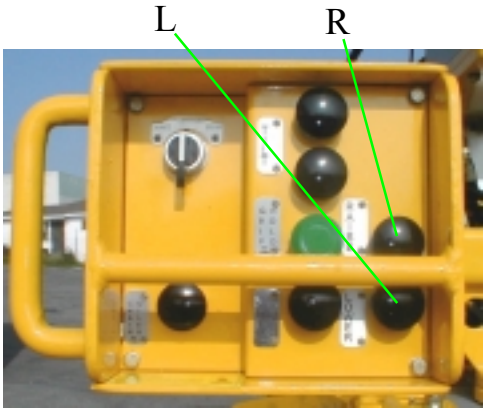






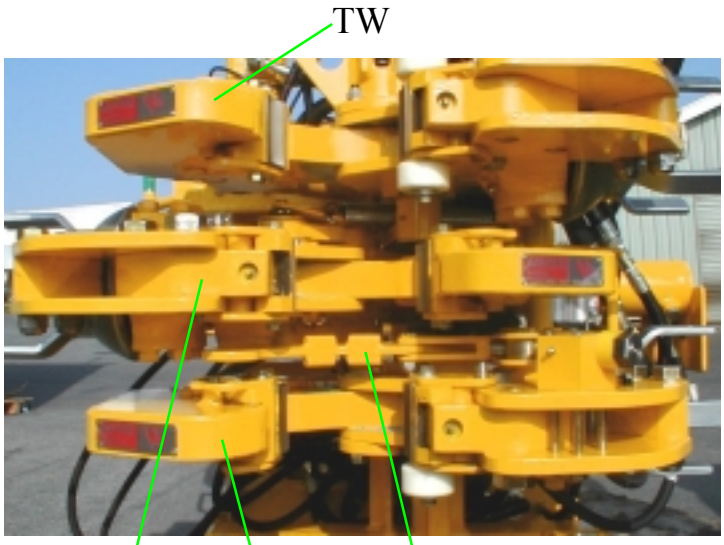


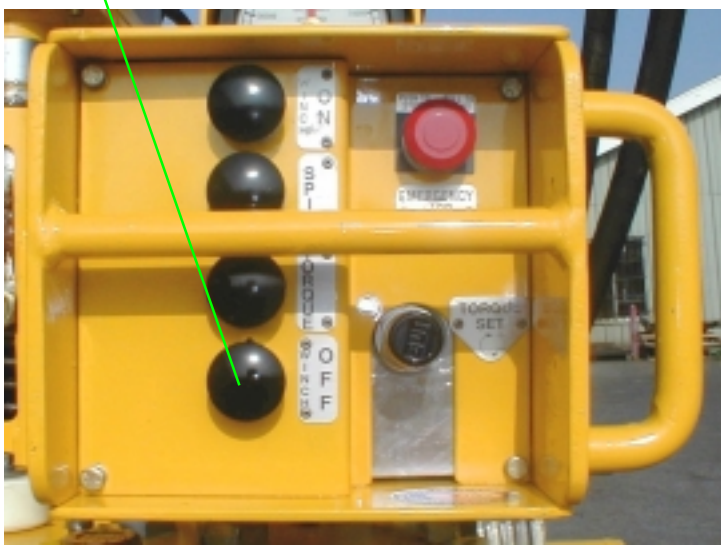
Position for Make Up (cont.)

7. Check that the HawkJaw **Top wrench** (TW), **Middle wrench** (MW) and **Bottom wrench** (BW) hang **straight** and **level** when the drill pipe is against the pipe stop.
8. If the HawkJaw **wrenches** (TW, MW, BW) hang **tilted** forward or backward, use the Top Tilt (TT) button or the Bottom Tilt (BT) button to level the wrenches. Center the level bubble (LB).
9. If the HawkJaw **wrenches** (TW, MW, BW) hang **sloped** to the **right** or to the **left**, push and hold down Winch Off (WOff) to back the HawkJaw off the pipe. Use Lower (L) to lower the HawkJaw to the rig floor. **Repeat Step 2**.
10. Make sure the **Pipe stop** (PS) is **against** the **drill pipe connection.**

NOTE

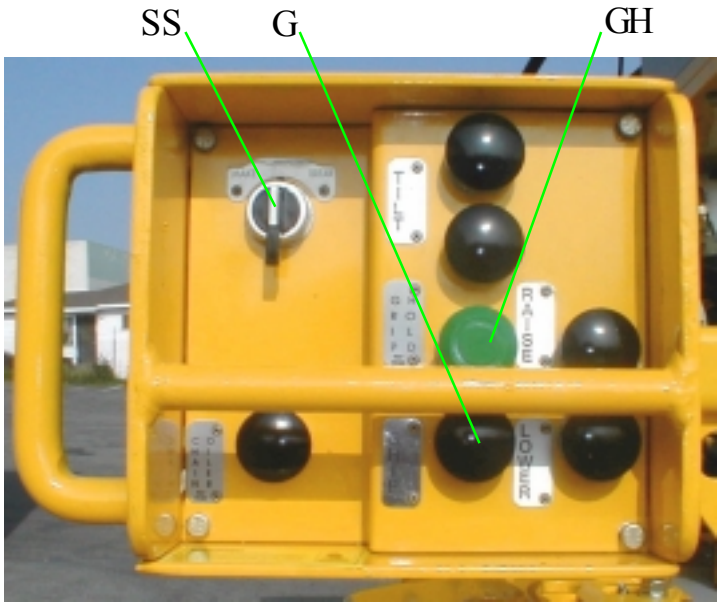
The HawkJaw performs best when it hangs aligned with pipe.

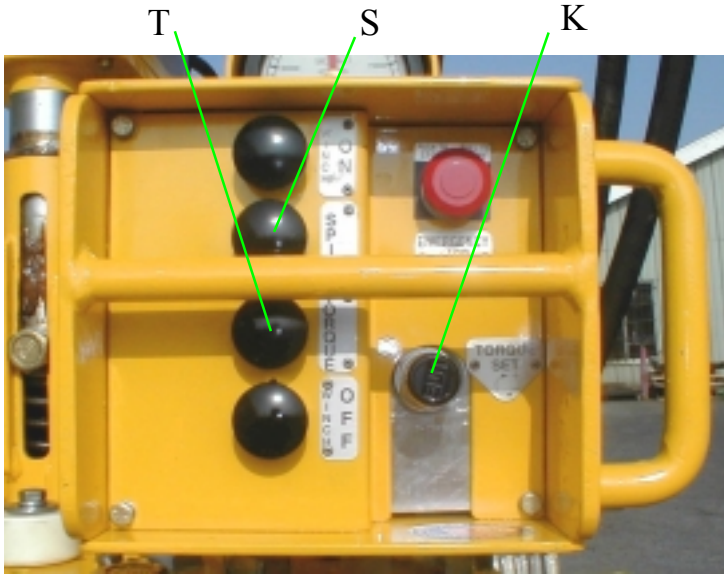


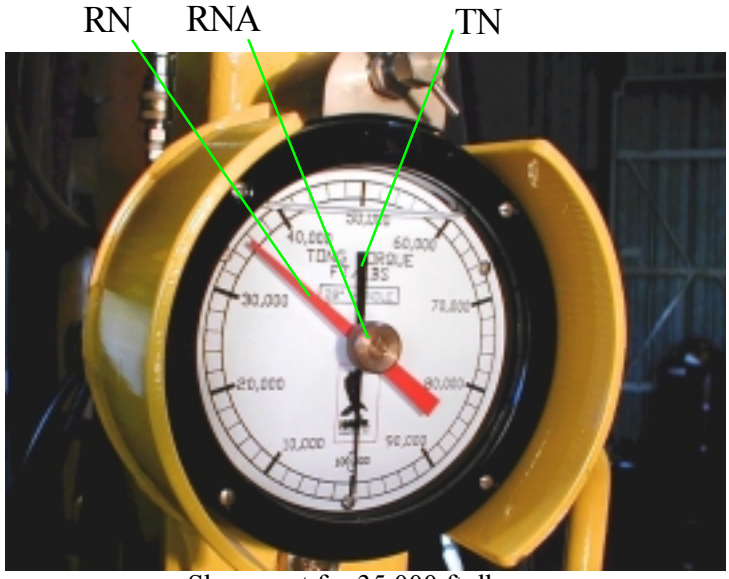


Setting Make Up Torque

1. Follow the steps on pages 17-21.
2. Turn the **Selector Switch** (SS) to **Make**.
3. Use the Red needle adjust (RNA) to rotate the **Torque gauge red needle** (RN) to the **desired torque**.
4. **Rotate** the **Torque Set knob** (K) **counter- clockwise** as far as the Torque Set knob (K) will turn.
5. Press in the **Grip Hold** (GH) button.
6. Press and hold **Spin** (S) until the stand rotates down to the shoulder.
7. Release Spin (S). Immediately press and hold **Grip** (G).
8. While holding down Grip (G), press and hold **Torque** (T). While holding down both Grip (G) and Torque (T), **rotate** the **Torque Set knob** (K) **clockwise**.
9. When the **Torque gauge needle** (TN) reaches the **desired torque**, **stop** rotating the Torque Set knob (K).
10. **Release** both **Torque** (T) and **Grip** (G) **at** the **same time**.
11. Pull out the **Grip Hold** (GH) button.







Shown set for 35,000 ft. lbs.

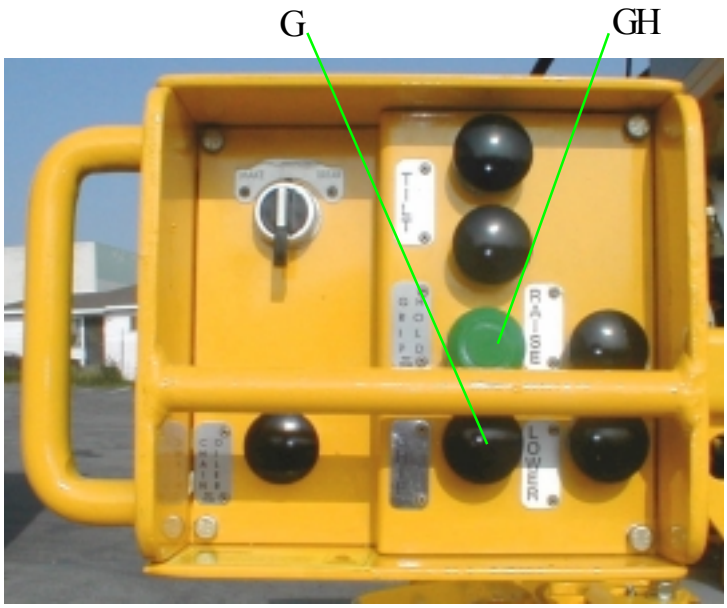
Make Up

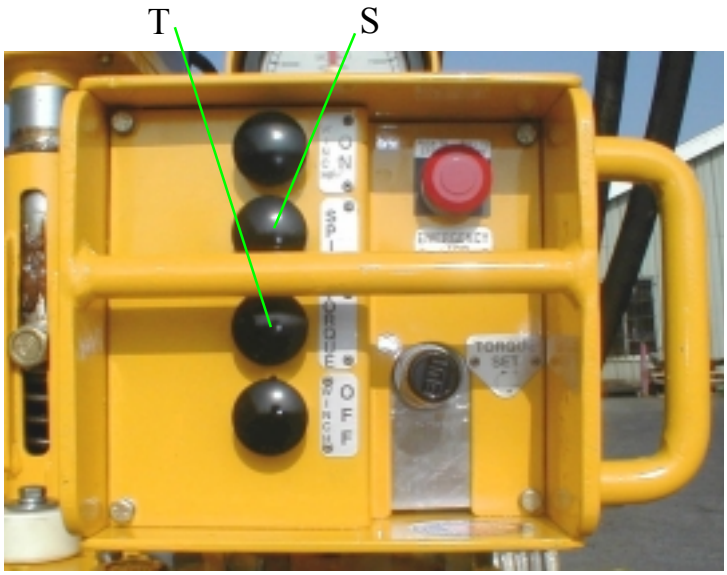
1. Press in the **Grip Hold** (GH) button.
2. Press and hold **Spin** (S) until the stand rotates down to the shoulder.
3. Release **Spin** (S).
4. **Push in** and **hold** the wrench **Grip** (G).
5. **Push** and **hold** down **Torque** (T).
6. Watch the Torque gauge needle (TN).
7. When the **Torque gauge needle** rises above and settles at the **desired torque** (this **rising above** is a normal hydraulic adjustment), release **Torque** (T). Immediately release **Torque** (T) button and the wrench **Grip** (G) button.

7a. **Note:** If the desired torque is not achieved, **repeat steps 4-7**.

8. Pull out the **Grip Hold** (GH) button.
9. The **Hawkjaw can now be removed** from the **pipe**.

SEE LOW TORQUE WARNING SYSTEM CHECK PG. 24





Low Torque Warning Test

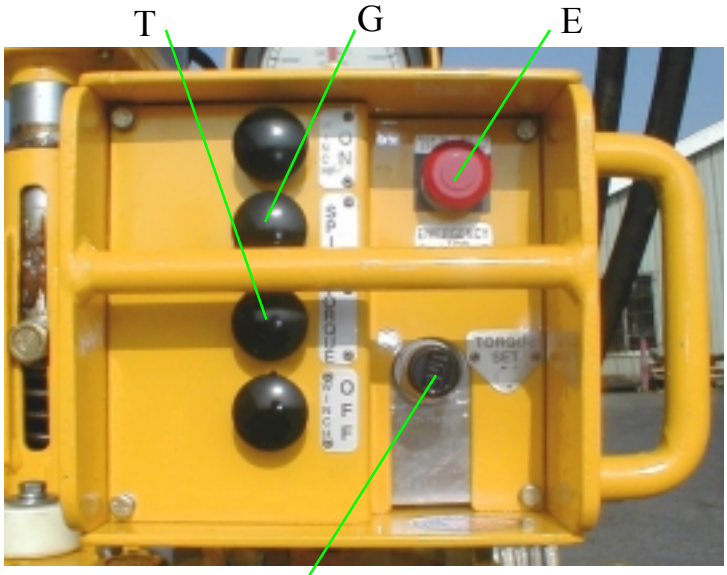
CHECK

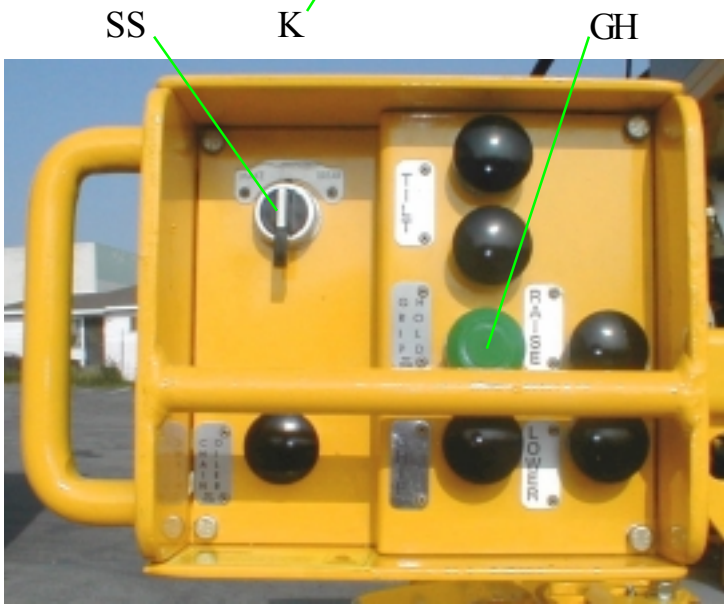
If the **Torque cylinder strokes out** before the **desired torque** is reached, the **Torque gauge needle** (TN) will **fall off** to approximately a **8000 Ft.-Lb**. reading. If this happens, **release Torque** (T). Immediately **release Grip** (G). **Wait for** the **Torque cylinder** to **reset**.

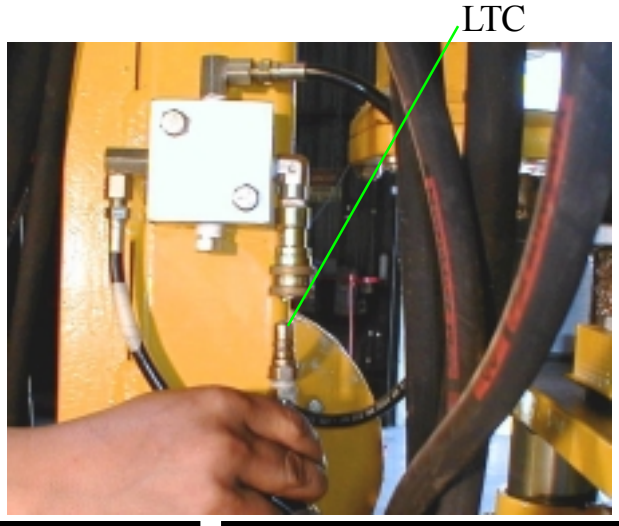
LOW TORQUE WARNING SYSTEM CHECK

Test#1: **Hawk strongly recommends testing the Low Torque Warning System on every trip**. If this test procedure is not performed, the **drill string could be over torqued**. **Disconnect** the Low torque warning **test connector** (LTC) located on the main hanger. **Torque** the first **connection**. **Note** the torque gage **needle position**; keep the Hawkjaw positioned on the **same connection**. Now **re-connect the Low Torque Warning Connector**. **Re-torque** the **connection**. The torque gage **should indicate** the **same reading**. If it does not, see Trouble Shooting.

Test#2: **Hawk strongly recommends testing the Low Torque Warning System on every trip**. If this test procedure is not performed, the **drill string could be under torqued**. **When breaking** the **first connection**, push in the **Grip Hold** (GH) button, hold down both **Torque** (T) and **Grip** (G) **until** the **Torque Cylinder fully strokes out**. When the Torque Cylinder fully strokes out, the Torque **Gauge Needle** will **fall off** to approximately an **8000 Ft.- Lb** reading. If this does not occur..







NOTE

For safety, push in the "E" stop when the HawkJaw is at rest.

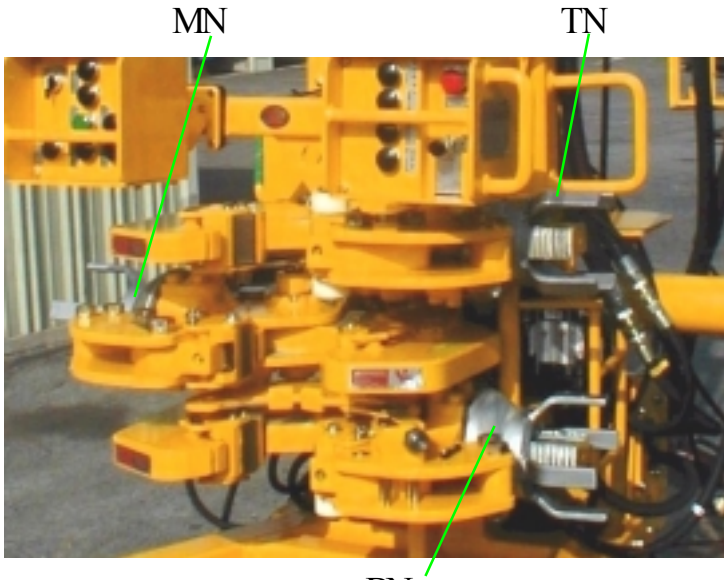
WARNING

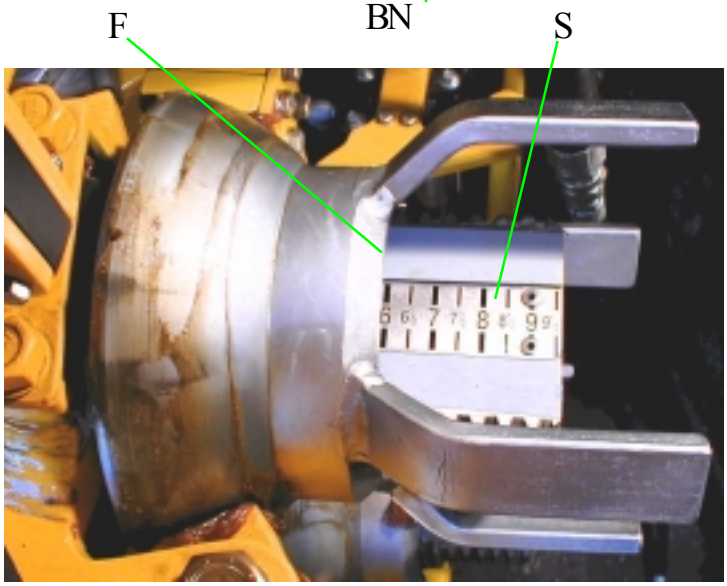
Do not make up pipe with the low torque warning test connector dis-connected. This may result in under torqued pipe in the hole.

Adjust for Break Out

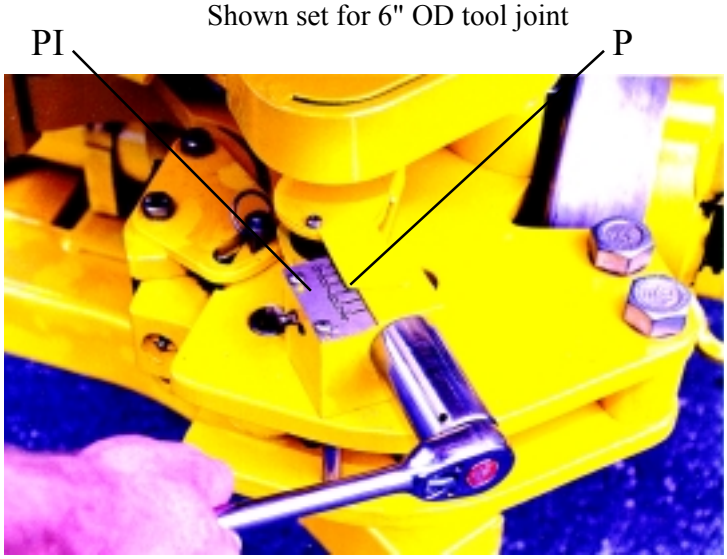
Adjusting the Wrenches

1. **Measure** the **tool joint** with OD calipers.
2. Use the 1 1/4" wrench to **adjust** the **Pointer** (P) on the **Pipe stop index** (PI) to the **OD** tool joint **size**. Its always better to **adjust** the **pointer 1/4" larger** than the **measured diameter** of the **tool joint**.
3. For safety, **adjust** the **Top wrench nut** (TN) **1" larger** than the Middle wrench nut (MN) and the Bottom wrench nut (BN).
4. **Rotate** the **Middle wrench nut** (MN) and the **Bottom wrench nut** (BN) to the **OD** tool joint **size**. Visually **align** the end **face** (F) of the wrench nut with the **scale** (S) on the wrench.





Shown set for 6" OD tool joint

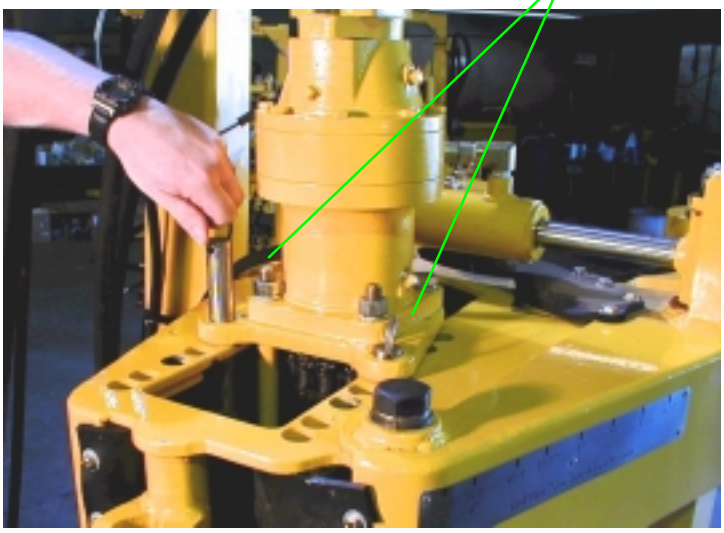


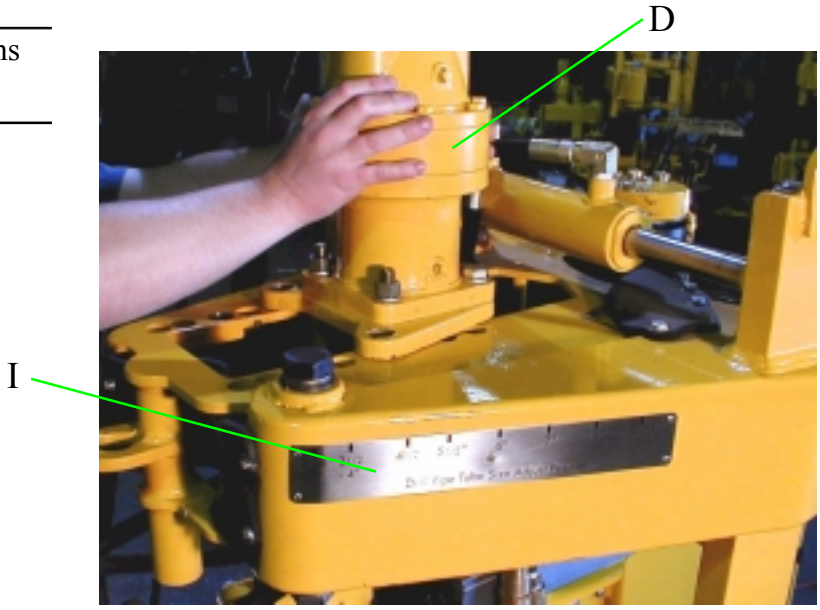
Shown set for 6 " OD tool joint

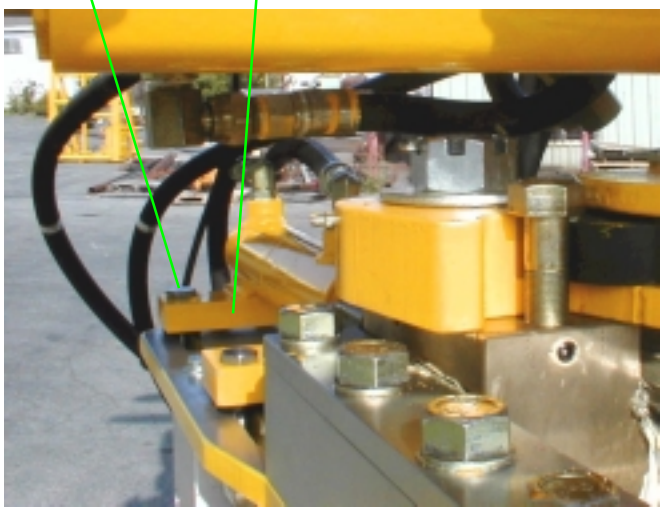
Adjust for Break Out

Adjusting the Spinner

1. **Measure** the drill pipe **tube** with OD calipers.
2. **Remove** the **quick release** pins (QR).
3. **Slide** the whole **Drive unit** (D) **forward or backward** to the appropriate holes. Use the **pipe size index** (I) to adjust the drive unit to the correct setting.
4. **Replace** the **quick release** pins (QR).







NOTE

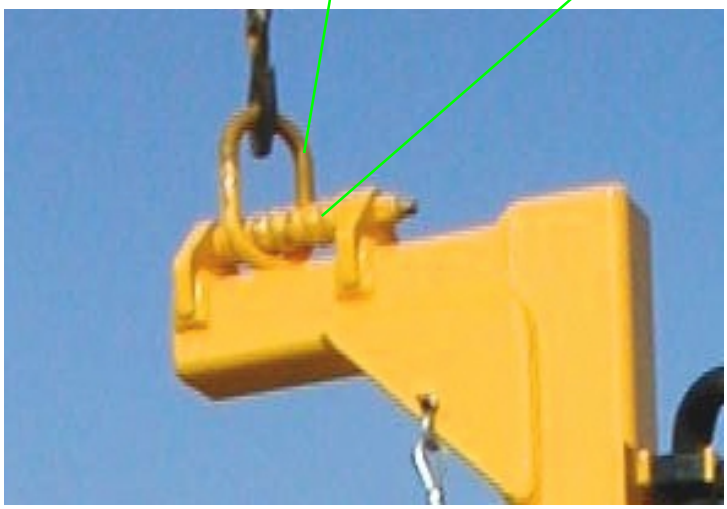
Spinner performance could be reduced if the spinner push cylinder stroke is insufficient to allign the spinner correctly with the drill pipe, especially on sizes above 5 1/2" tube. To correct this problem:

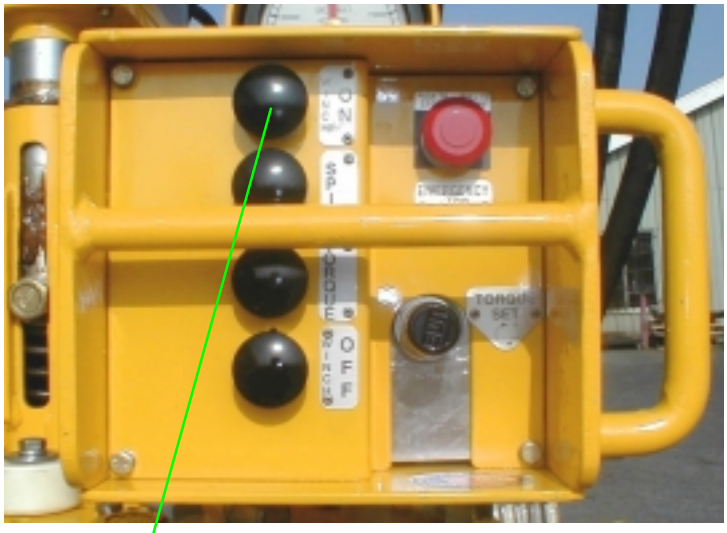
1. Loosen the four spinner slide assembly bolts (SAB).
2. Re-adjust the spinner slide assembly (SSA) forward so that the push cylinder strokes out far enough to reach the connection.
3. Tighten the spinner slide assembly bolts (SAB).

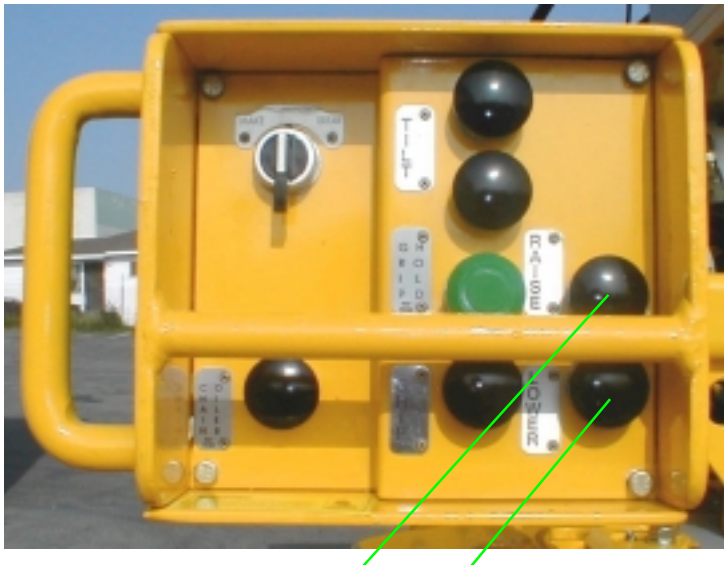
Position for Break Out

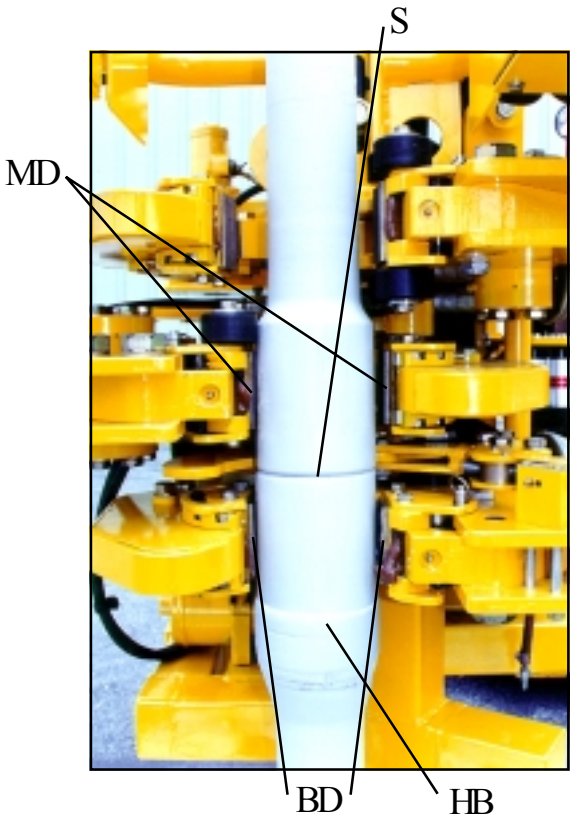
1. **Center** the **Suspension Ring** (SR) on the Lateral tilt screw (LTS).
2. Push and hold down Winch On (WOn) to **move** the **HawkJaw onto** the **drill pipe connection**.
3. Use Raise (R) and Lower (L) to **center** the Middle wrench dies (MD) and the Bottom wrench **dies** (BD) **between** the **shoulder** (S).
4. Keep the **Bottom** wrench **dies** (BD) **away** from the **Hard band-ing** (HB).
5. Keep the **Middle** wrench **dies** (MD) and **Bottom** wrench **dies** (BD) **away** from the **shoulder** (S).

Continued on next page.







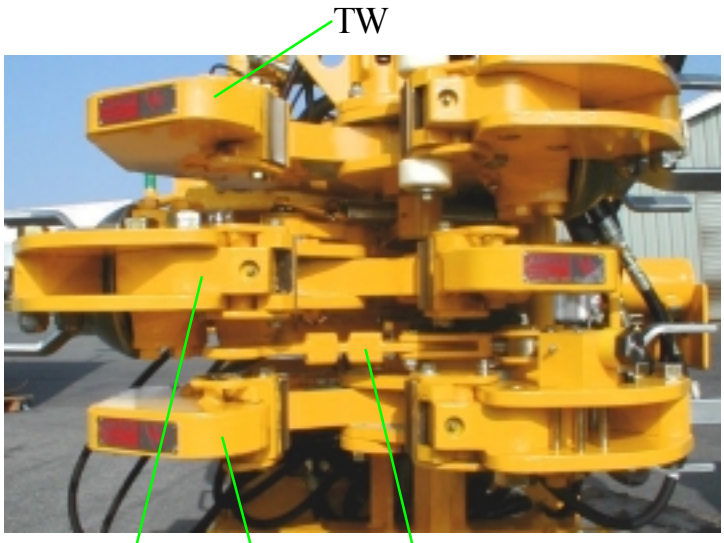


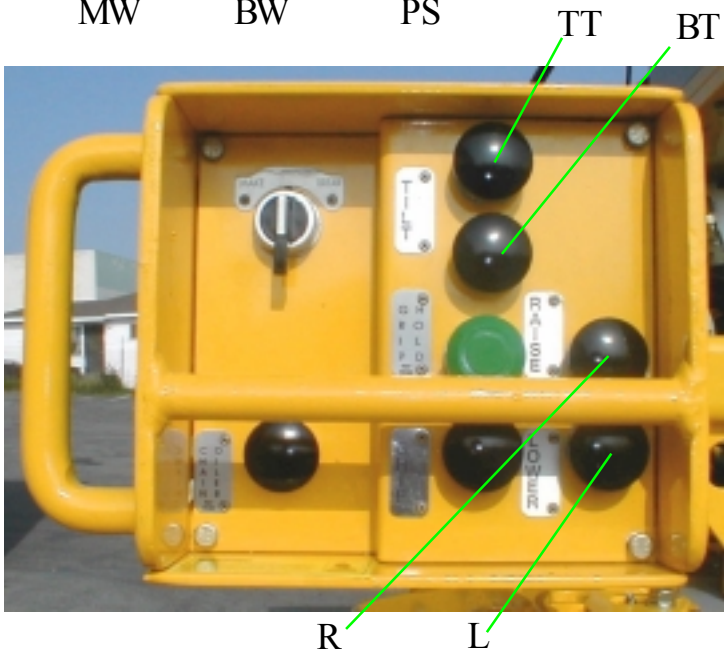
Position for Break Out

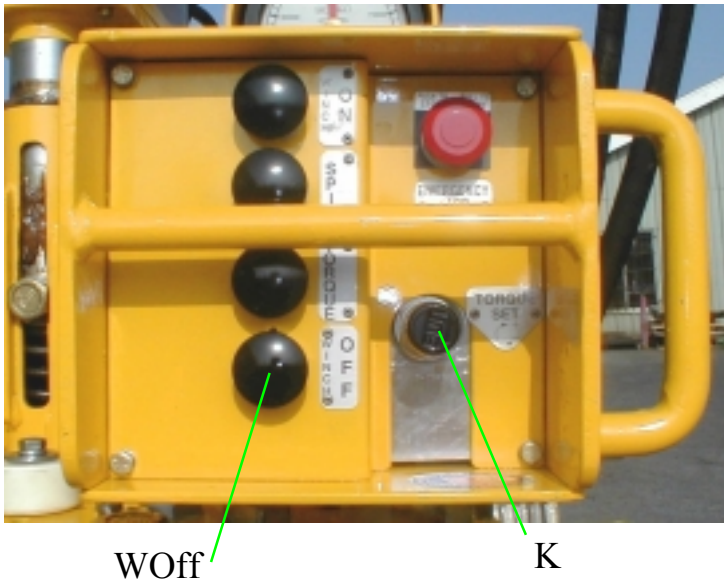
6. Check that the HawkJaw **Top wrench** (TW), **Middle wrench** (MW) and **Bottom wrench** (BW) hang **straight** and **level** when the drill pipe is against the pipe stop.
7. If the HawkJaw **wrenches** (TW, MW, BW) hang **tilted** forward or backward, use the Top Tilt (TT) button or the Bottom Tilt (BT) button to level the wrenches. Center the level bubble (LB).
8. If the HawkJaw **wrenches** (TW, MW, BW) hang **sloped** to the **right** or to the **left**, push and hold down Winch Off (WOff) to back the HawkJaw off the pipe. Use Lower (L) to lower the HawkJaw to the rig floor. **Repeat Step 2**.
9. Make sure the **Pipe stop** (PS) is **against** the **drill pipe connection.**

NOTE

The HawkJaw performs best when it hangs aligned with pipe.

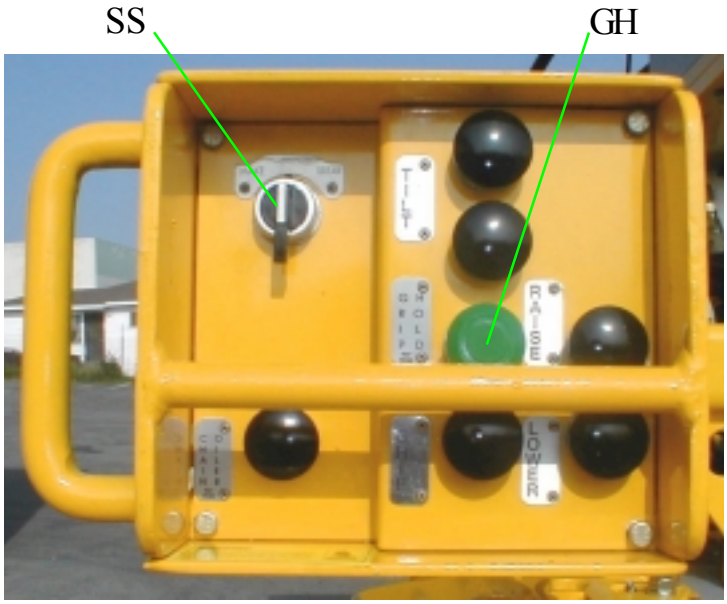


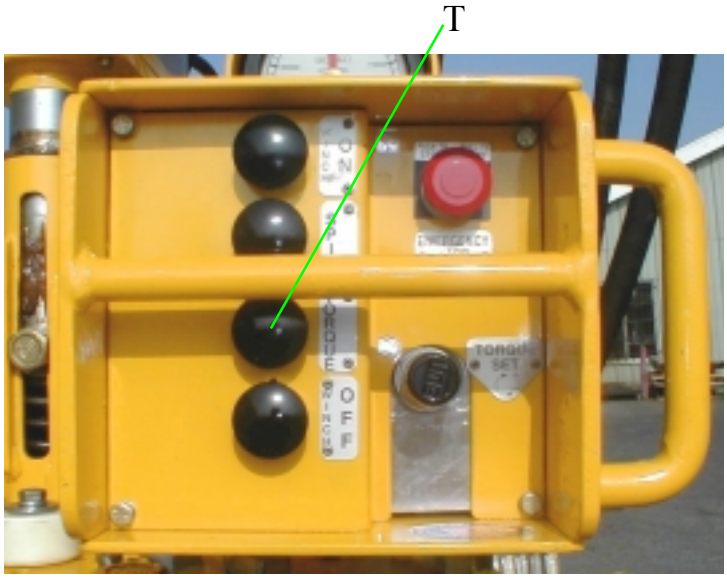


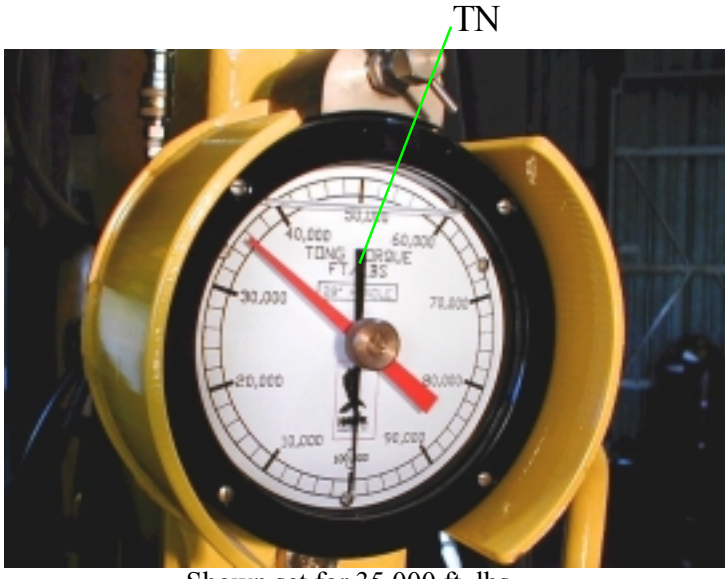


Break Out

1. **Rotate** the **Selector Switch** (SS) clockwise to the **break** position.
2. Push in the **Grip Hold** (GH) button.
3. **Push** and **hold** in the wrench **Grip** (G).
4. Push and hold down **Torque** (T).
5. **When break out occurs**, **release Torque** (T). Immediately **release** the wrench **Grip** (G). See note below.
6. Press and hold down **Spin** (S) until the stand pops out of the connection. **Release Spin** (S). **If** the **stand will not spin**, **release Spin** (S). Repeat Steps 4-6.
7. Pull out the **Grip Hold** (GH) button.
8. You are now able to **remove** the **Hawkjaw** from the pipe.







Shown set for 35,000 ft. lbs.

Wrench Maintenance

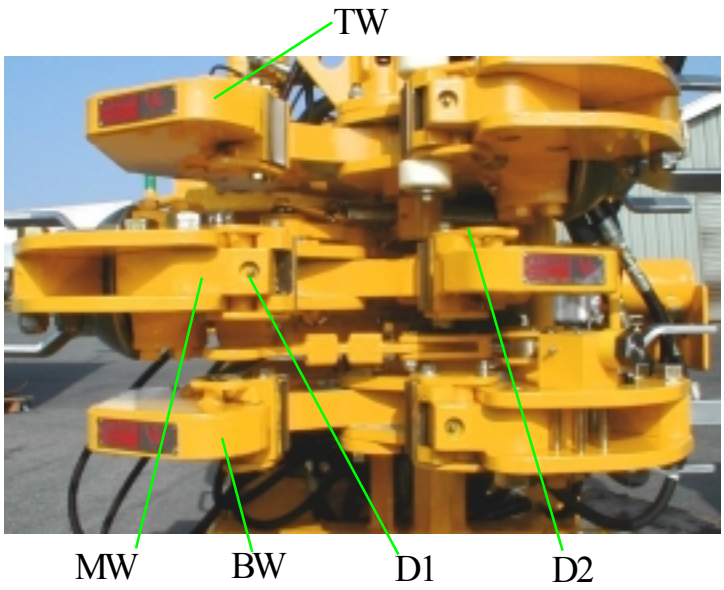
Grease Once per Trip

Tools Required

Grease gun

Initial Steps

1. Make sure the HawkJaw is off the drill pipe connection and in the **rest position** on the derrick.
2. **Shut down** the **Hydraulic power** unit.
3. **Press** the **Grip button repeatedly** to bleed hydraulic pressure.
4. **Disconnect** the **Air** power supply.
5. **Push in** the **"E" stop**.
6. **Assume** that there is still a **load** on every actuator. Proceed with caution.



Die Pivot Blocks

1. **Pump grease fittings** D1-D2 on the Top wrench (TW), Middle Wrench (MW), and Bottom Wrench (BW).

NOTE

Consistent lubrication of the wrenches increases performance and component life.

Wrench Maintenance

Grease Once per Week, Minimum

Wrench Hook

1. **Surface grease** the **hook thread** (T) on the top wrench, middle wrench, and bottom wrench.
2. **Rotate** the **wrench nut** (N) on the top wrench, middle wrench, and bottom wrench to spread grease on the full thread area.

Wrench Nut

1. **Surface grease** the **wrench nut surface** (NS) on the top wrench, middle wrench, and bottom wrench.

Hook Pivot Bearing Cap

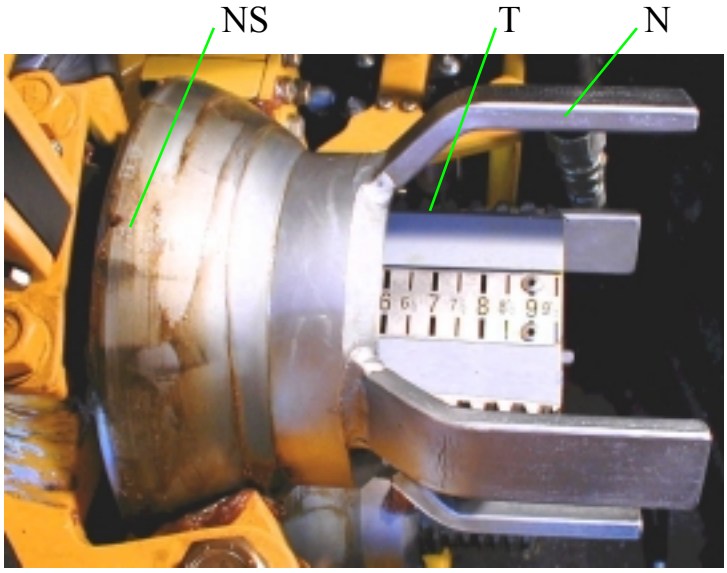
1. **Pump** the Hook pivot bearing cap **grease fittings** (H1-H2) on the top and bottom of each wrench.

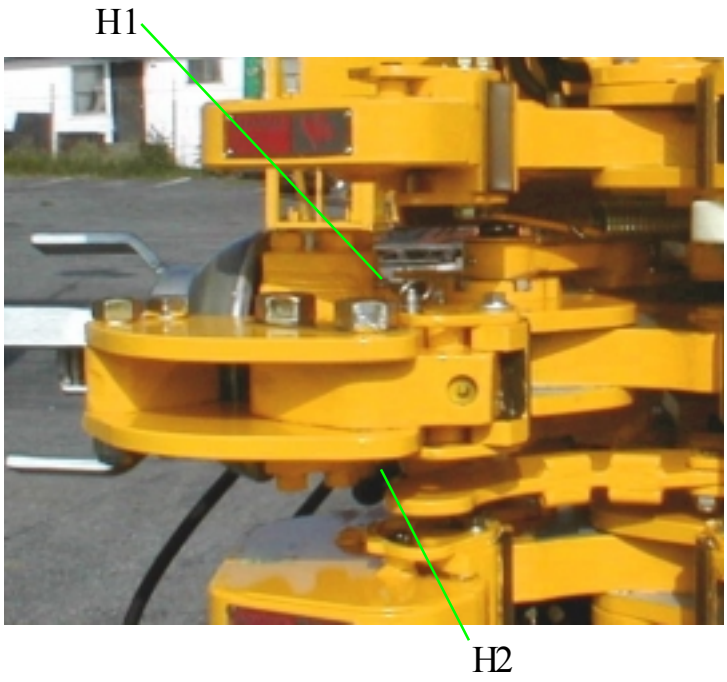
Part Numbers

Part Name	Part #
Straight Grease Fitting	061-1103K1
45° Grease Fitting	061-1103K2
90° Grease Fitting	061-1103K3

NOTE

Consistent lubrication of the wrenches increases performance and component life.





Wrench Maintenance

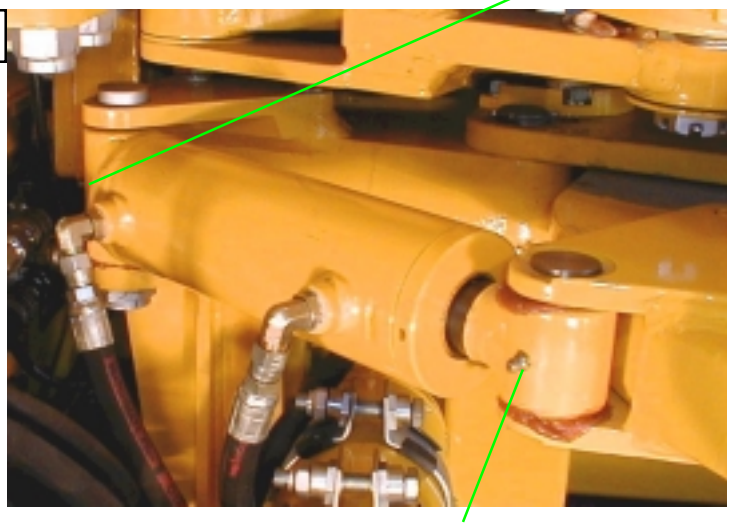
Grease Once per Week, Minimum

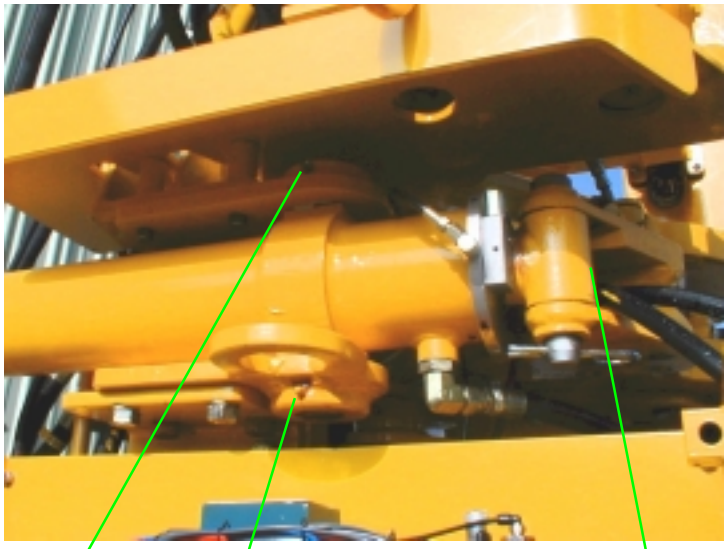
Tools Required

Grease gun

Initial Steps

1. Make sure the HawkJaw is off the drill pipe connection and in the **rest position** on the derrick.
2. **Shut down** the **Hydraulic power** unit.
3. **Press** the **Grip button repeatedly** to bleed hydraulic pressure.
4. **Disconnect** the **Air** power supply.
5. **Push in** the **"E" stop**.
6. **Assume** that there is still a **load** on every actuator. Proceed with caution.





Grip Cylinder Pivot Points

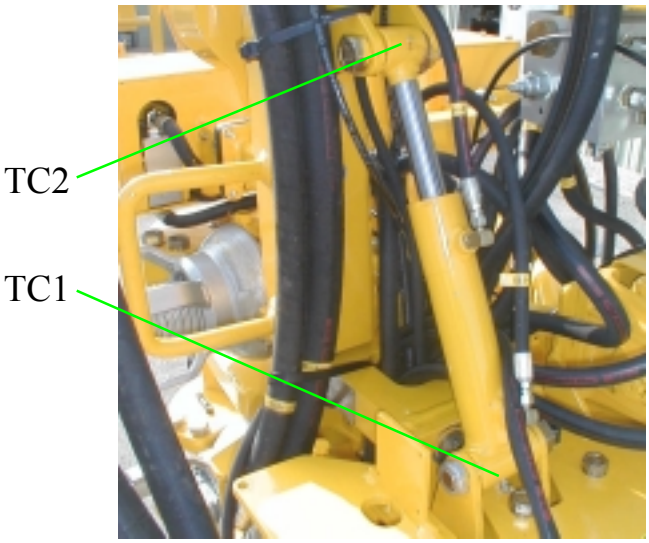
1. **Pump grease fittings** G1-G2 on each Grip Cylinder.

Torque Cylinder Pivot Points

1. **Pump grease fittings** T1-T3.

Tilt Cyl inder Pivot Points

1. **Pump grease fittings** TC1-TC2.



NOTE

Consistent lubrication of the cylinder pivot points increases performance and component life.

Wrench Maintenance

Grease Once per Week, Minimum

Tools Required

Grease gun

Initial Steps

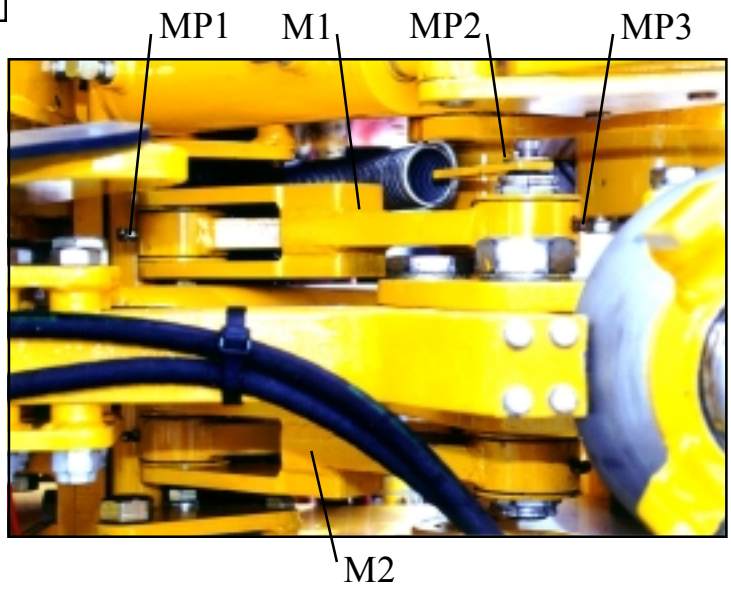
1. Make sure the HawkJaw is off the drill pipe connection and in the **rest position** on the derrick.
2. **Shut down** the **Hydraulic power** unit.
3. **Press** the **Grip button repeatedly** to bleed hydraulic pressure.
4. **Disconnect** the **Air power** supply.
5. **Push in** the **"E" stop**.
6. **Assume** that there is still a **load** on every actuator. Proceed with caution.

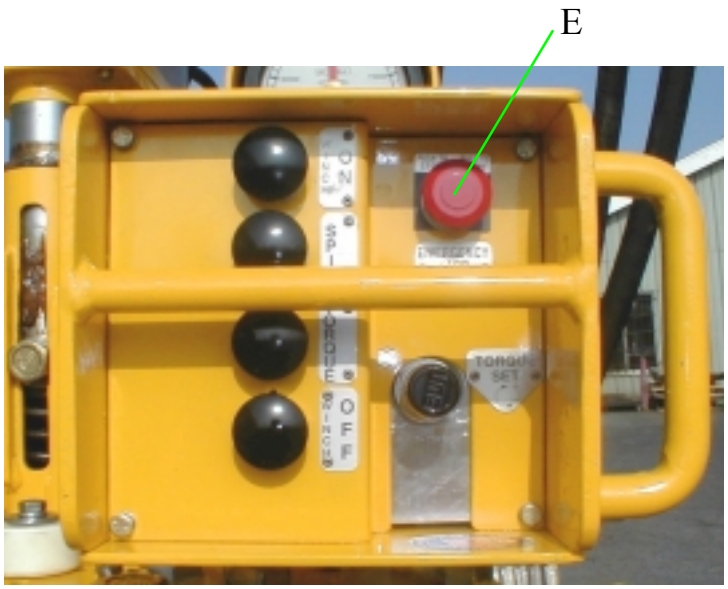
Mounting Arm Pivot Points

1. **Pump grease fittings** MP1-MP3 on each Mounting Arm (M1, M2).

Part Numbers

Part Name	Part #
Straight Grease Fitting	061-1103K1
45° Grease Fitting	061-1103K2
90° Grease Fitting	061-1103K3





NOTE

Consistent lubrication of the mounting arm pivot points increases performance and component life.

Filter Maintenance

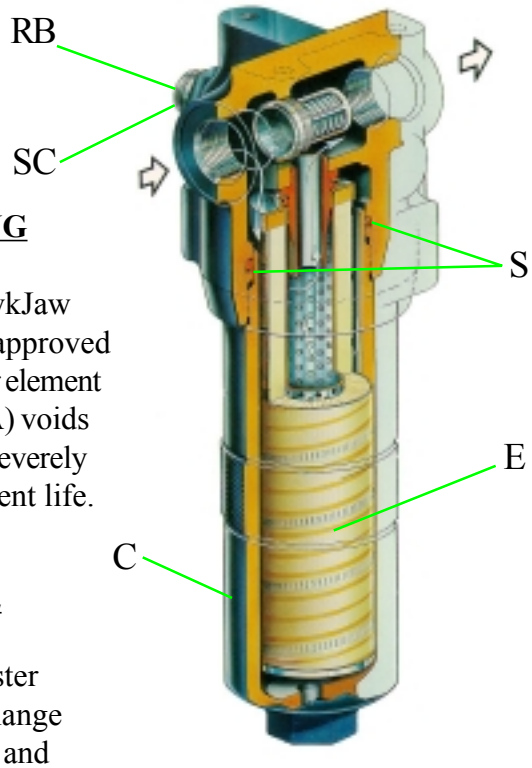
Change Every 2 Months

Initial Steps

1. Depress the Red button (RB) located under the See-through rubber weather cap (SC).
2. Operate the HawkJaw.
3. If the Red button pops up, proceed with Step 4.
4. Make sure the HawkJaw is off the drill pipe connection and in the **rest position** on the derrick.
5. **Shut down** the **Hydraulic power** unit.
6. **Press** the **Grip button repeatedly** to bleed hydraulic pressure.
7. **Disconnect** the **Air** power supply.
8. **Push in** the **"E" stop**.
9. **Assume** that there is still **pressure** in the **Pressure Line**. Proceed with caution.

Hydraulic Filter

1. **Remove** the Filter **Cannister** (C).
2. **Remove** the Filter **Element** (E).
3. **Insert** the new Filter **Element**.
4. **Replace** the Filter **Cannister** (C).



WARNING

Running the HawkJaw without a Hawk approved pressure-side filter element (Part # 061-H25A) voids the warranty and severely shortens component life.

NOTE

If the Cannister (C) leaks, change the "O" ring and back-up (S).

Part Numbers

Part Name	Part #
Filter	061-H25
Filter Element (E)	061-H25A
Filter Cannister/Body (C)	061-H25B
Weather Cap (RB)	061-H25RC
Filter Seal Kit (S)	061-H25SK

Hydraulic Filter

Filter Maintenance

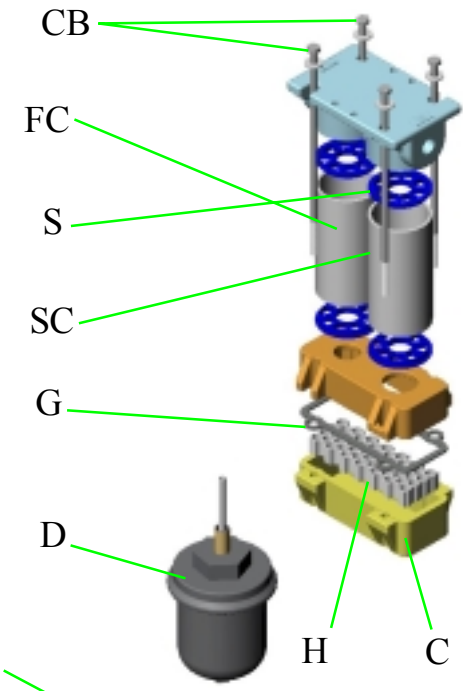
Change Every 2 Months

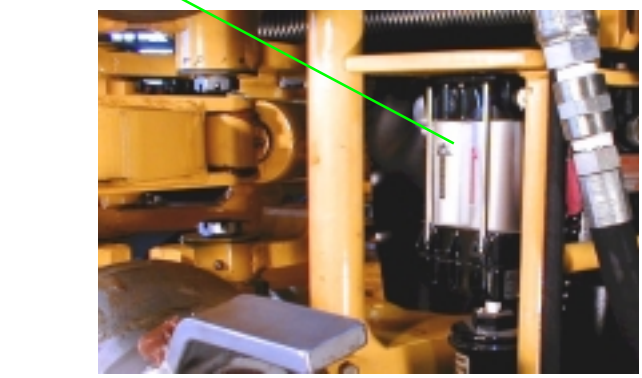
Initial Steps

1. **Disconnect** the **Air power** supply.
2. **Bleed** Air **Pressure**.

Air Filters

1. **Remove** the two right **Corner bolts** (CB).
2. **Slide out** the **Second stage** filter **cartridge** (SC) and Star spacers (S).
3. **Slide out** the **First stage** filter **cartridge** (FC) and Star spacers (S).
4. **Slide in** the **new** First stage filter **cartridge** and Star spacers (S).
5. **Slide in** the **new** Second stage filter **cartridge** and Star spacers (S).
6. **Replace** the two right **Corner Bolts** (CB).





Part Numbers

Part Name	Part #
In-line Air Filter (not shown)	061-J29
Float Drain (D)	061-J29A
Filter Cartridge Kit (FC&SC)	061-J29B/C
Gasket (G)	061-J29D
Base Core (C)	061-J29E
Corner Bolt Kit (CB)	061-J29F

Part Numbers

Part Name	Part #
On-board Air Filter	061-A22
Float Drain (D)	061-A22A
Filter Cartridge Kit (FC&SC)	061-A22B/C
Gasket (G)	061-A22D
Base (C)	061-A22E
Corner Bolt Kit (CB)	061-A22F
Base Core (H)	061-A22G

WARNING

Running the HawkJaw without Hawk approved air filters (Part # 061-J29, 061-A22) voids the warranty and shortens component life.

Changing the Hook Dies

Tools Required

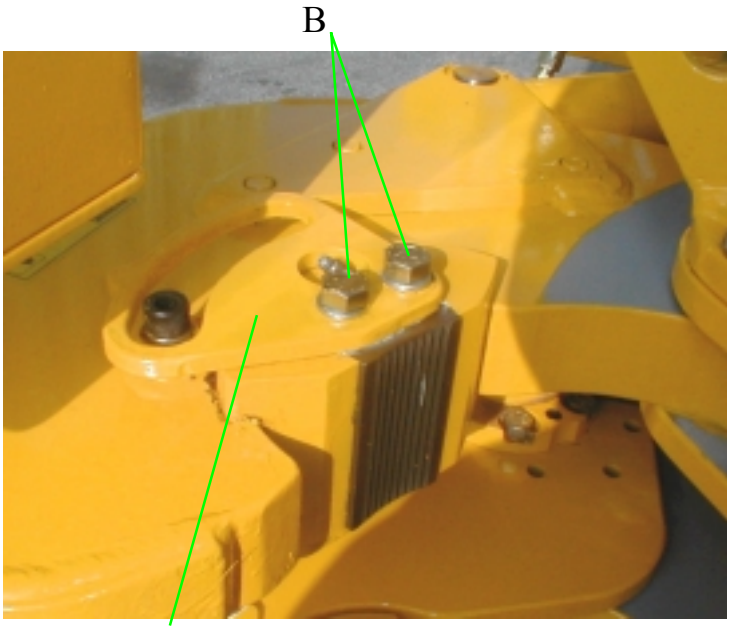
3/4" wrench, See Drawings.

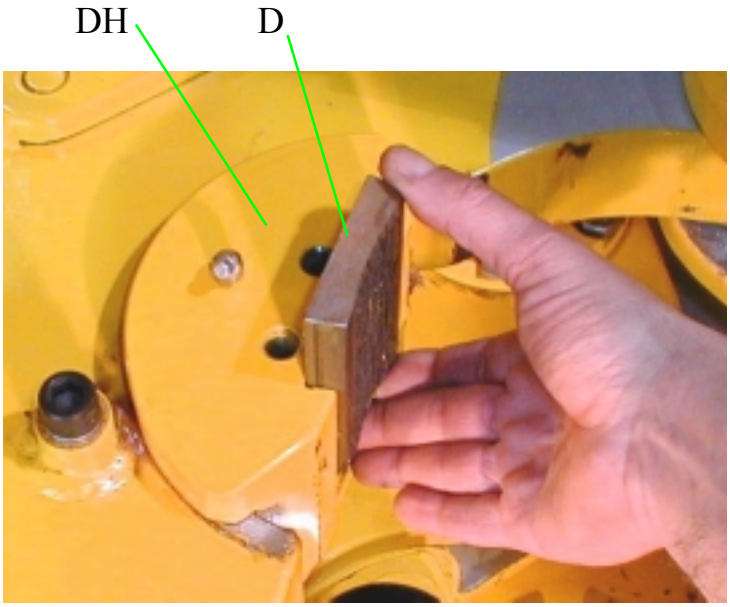
Initial Steps

1. Make sure the HawkJaw is off the drill pipe connection and in the **rest position** on the derrick.
2. **Shut down** the **Hydraulic power** unit.
3. **Press** the **Grip button repeatedly** to bleed hydraulic pressure.
4. **Disconnect** the **Air** power supply.
5. **Push in** the **"E" stop**.
6. **Assume** that there is still a **load** on every actuator. Proceed with caution.

Hook Dies

1. Use the 3/4" wrench to **remove** the **Die Holder Bolts** (B). **Remove** the **Die Retainer** (DR).
2. **Slide out** the **worn Die** (D).
3. Make sure the **back** and **sides** of the **new Die** are **clean**.
4. **Grease** the **back** of the new Die.
5. **Insert** the **new Die** into the Die Holder (DH) with the **teeth** of the Die **facing out**.
6. **Replace** the **Die Retainer** (DR). Use the 3/4" wrench to **replace** the **Die Holder Bolts** (B) and Lock Washers.





Part Numbers

Part Name	Part #
Die (D)	061-20194
Die Holder Bolt (B)	999-806245
Spirol Lock Washer	999-810703
Die Holder (DH)	061-20192B

Changing the Heel Dies

Tools Required

3/4" wrench, See Drawings.

Initial Steps

1. Make sure the HawkJaw is off the drill pipe connection and in the **rest position** on the derrick.
2. **Shut down** the **Hydraulic power** unit.
3. **Press** the **Grip button repeatedly** to bleed hydraulic pressure.
4. **Disconnect** the **Air** power supply.
5. **Push in** the **"E" stop**.
6. **Assume** that there is still a **load** on every actuator. Proceed with caution.

Top Wrench Heel Die

1. Use the 3/4" wrench to **remove** the **Heel Die Roller Bolts** (B) on the top of the Die Rollers (R).
2. **Remove** the **Roller Bushings** (RB).
3. **Remove** the **Heel Die Rollers** (R).
4. **Pull** out the **Heel Die Pin** (P).
5. **Remove** the Top **Die Retainer** (DR).
6. **Slide out** the **worn Die** (D).

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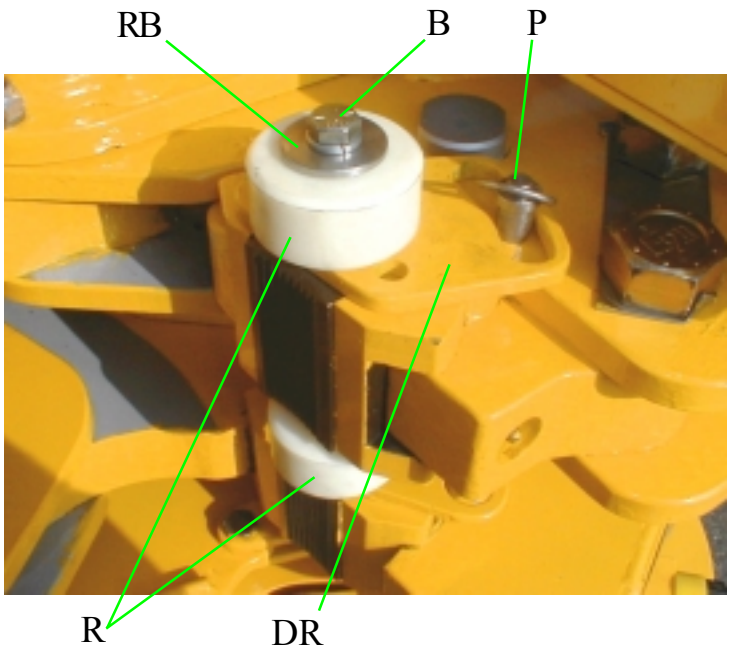
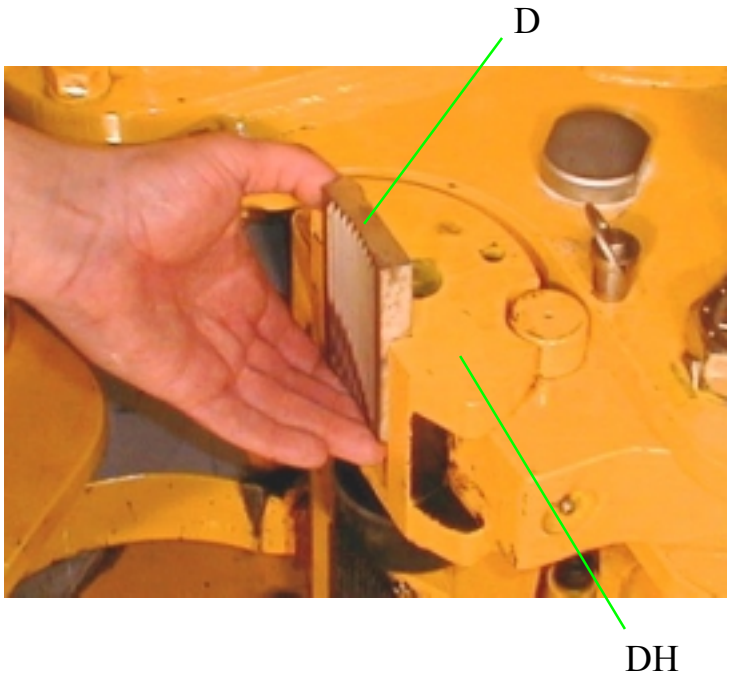
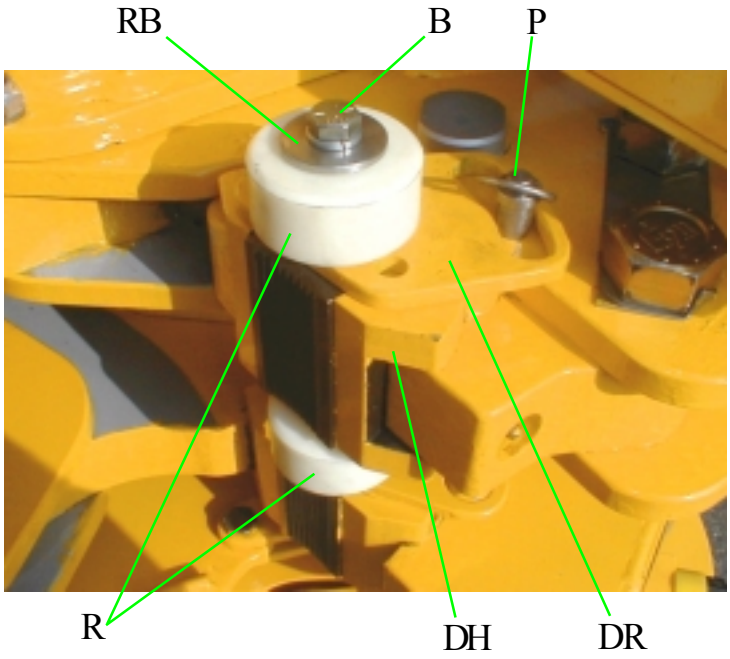




Changing the Heel Dies

7. Make sure the **back** and **sides** of the **new Die** are **clean**.
8. **Grease** the **back** of the **new Die**.
9. **Insert** the **new Die** into the Die Holder (DH) with the **teeth** of the Die **facing out**.
10. **Replace** the Top **Die Retainer** (DR).
11. **Insert** the **Heel Die Pin** (P).
12. **Replace** the **Heel Die Rollers** (R).
13. **Replace** the **Roller Bushings** (RB).
14. Use the 3/4" wrench to **replace** the **Heel Die Roller Bolts** (B) and Lock Washers.



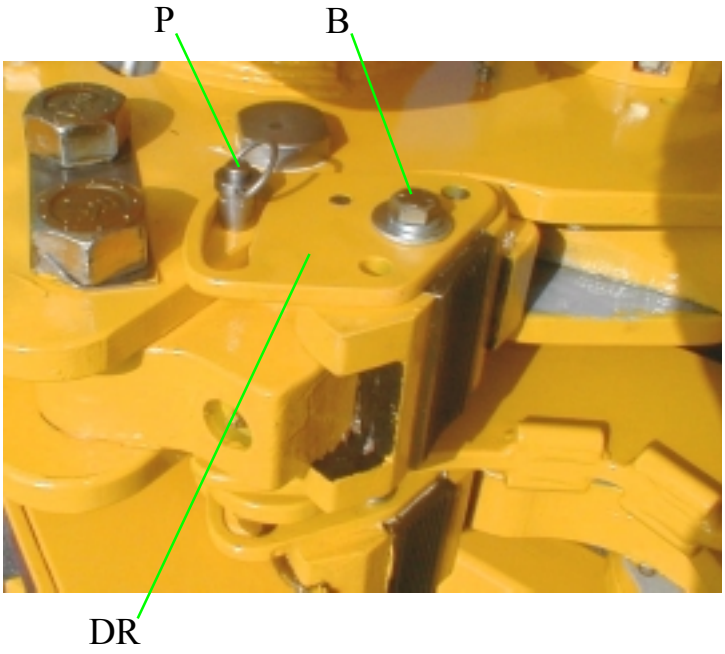
Part Numbers

Part Name	Part #
Spirol Lock Washer	999-810703
Die Roller Bolt (B)	999-806307
Die Roller (R)	061-20210
Die Roller Bushing (RB)	061-20208A
Die (D)	061-20194
Die Holder (DH)	061-20192-1A
Heel Die Pin (P)	061-92384A092

Changing the Heel Dies

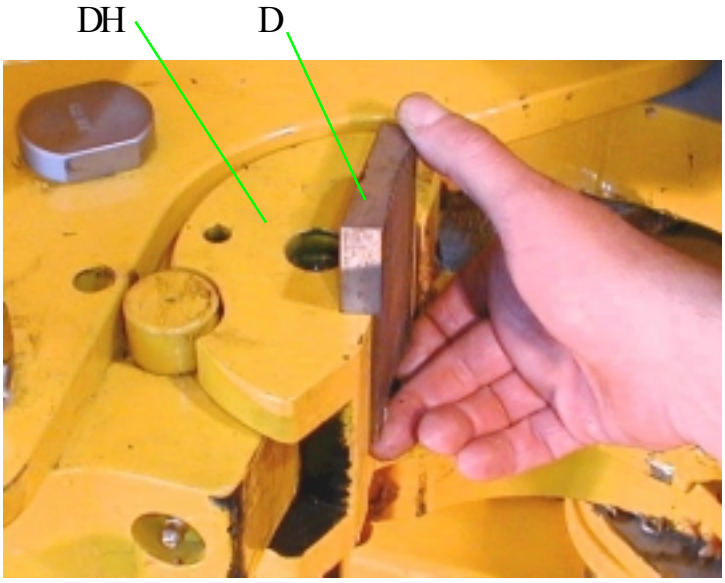
Initial Steps

1. Make sure the HawkJaw is off the drill pipe connection and in the **rest position** on the derrick.
2. **Shut down** the **Hydraulic power** unit.
3. **Press** the **Grip button repeatedly** to bleed hydraulic pressure.
4. **Disconnect** the **Air** power supply.
5. **Push in** the **"E" stop**.
6. **Assume** that there is still a **load** on every actuator. Proceed with caution.



Middle Wrench Heel Die

1. Use the 3/4" wrench to **remove** the **Heel Die Roller Bolts** (B).
2. **Pull** out the **Heel Die Pin** (P).
3. **Remove** the Top **Die Retainer** (DR).
4. **Slide out** the **worn Die** (D).
5. Make sure the **back** and **sides** of the **new Die** are **clean**.
6. **Grease** the **back** of the **new Die**.
7. **Insert** the **new Die** into the Die Holder (DH) with the **teeth** of the Die **facing out**.



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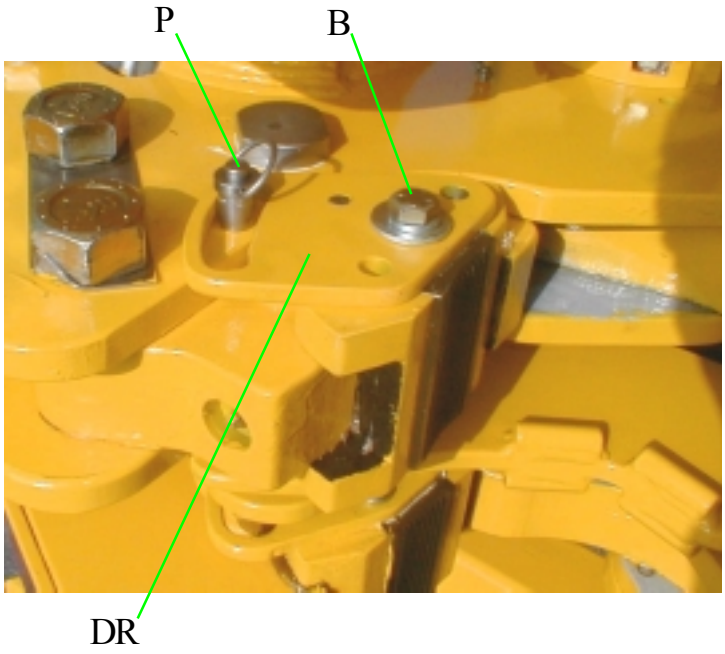
Changing the Heel Dies

8. **Replace** the Top **Die Retainer** (DR).
9. **Insert** the **Heel Die Pin** (P).
10. Use the 3/4" wrench to **replace** the **Heel Die Roller Bolt** (B) and Lock Washers.



Part Numbers

Part Name	Part #
Spirol Lock Washer	999-810703
Die Roller Bolt (B)	999-806307
Die Roller (R)	061-20210
Die Roller Bushing (RB)	061-20208A
Die (D)	061-20194
Die Holder (DH)	061-20192-1A
Heel Die Pin (P)	061-92384A092

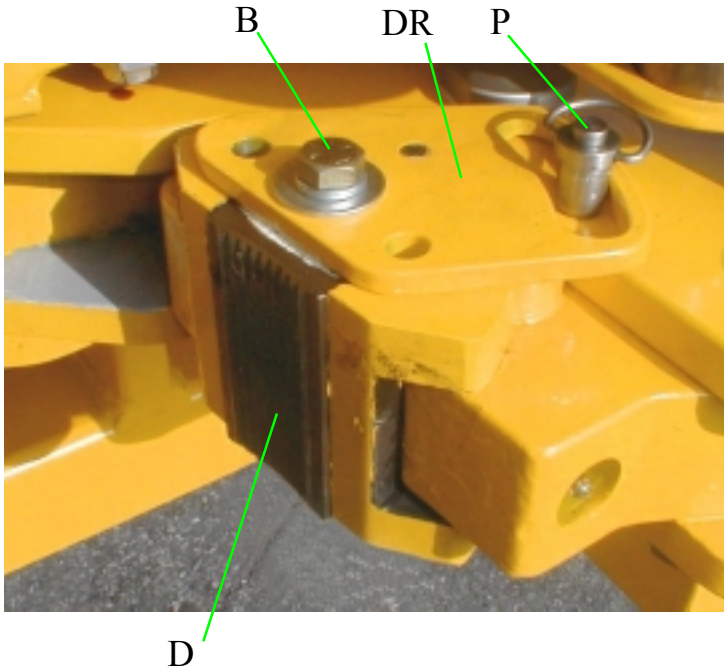
Changing the Heel Dies

Tools Required

3/4" wrench, See Drawings.

Initial Steps

1. Make sure the HawkJaw is off the drill pipe connection and in the **rest position** on the derrick.
2. **Shut down** the **Hydraulic power** unit.
3. **Press** the **Grip button repeatedly** to bleed hydraulic pressure.
4. **Disconnect** the **Air** power supply.
5. **Push in** the **"E" stop**.
6. **Assume** that there is still a **load** on every actuator. Proceed with caution.



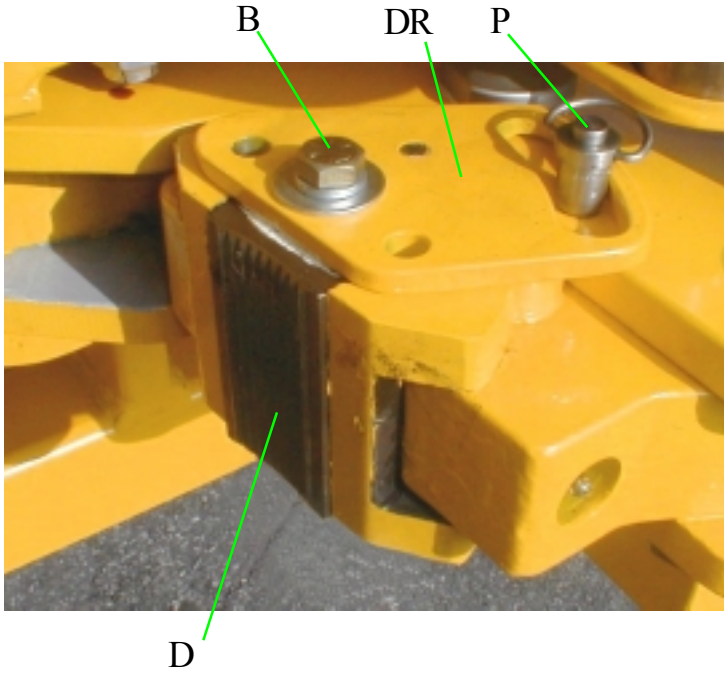
Bottom Wrench Heel Die

1. Use the 3/4" wrench to **remove** the **Heel Die Bolts** (B).
2. **Pull** out the **Heel Die Pin** (P).
3. **Remove** the Top **Die Retainer** (DR).
4. **Slide out** the **worn Die** (D).
5. Make sure the **back** and **sides** of the **new Die** are **clean**.

Continued on next page.

Changing the Heel Dies

6. **Grease** the **back** of the **new Die**.
7. **Insert** the **new Die** into the Die Holder (DH) with the **teeth** of the Die **facing out**.
8. **Replace** the Top **Die Retainer** (DR).
9. **Insert** the **Heel Die Pin** (P).
10. Use the 3/4" wrench to **replace** the **Heel Die Bolts** (B) and Lock Washers.



Part Numbers

Part Name	Part #
Lock Washers	999-810703
Die Roller Bolt (B)	999-806245
Die Roller (R)	061-20210
Die (D)	061-20194
Die Holder (DH)	061-20192-1A
Heel Die Pin (P)	061-92384A092

Spinner Maintenance

Notice

Spinner chain lubrication must be done during normal operation of the **Hawkjaw**. **Do not** run the spinner when the **Hawkjaw** is not on the pipe.

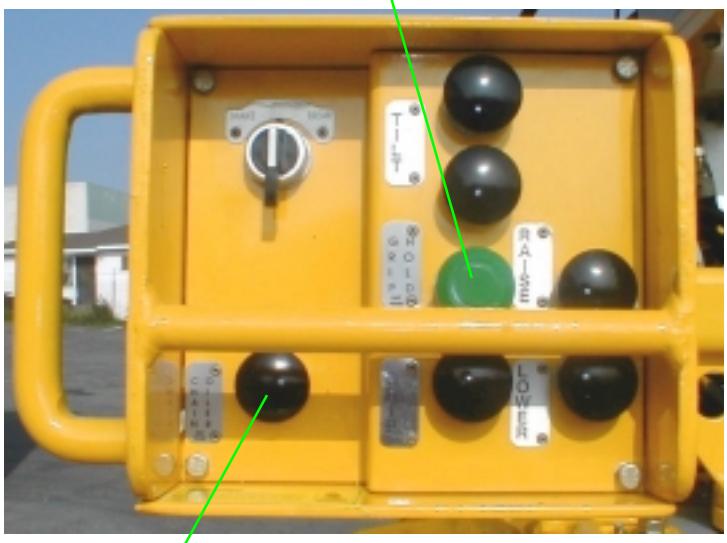
Initial Steps

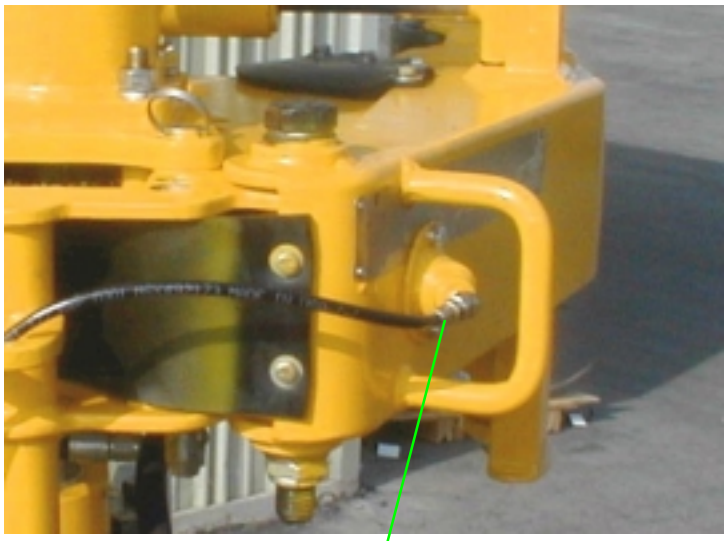
1. Position the **Hawkjaw** for breakout.

Chain Lubrication

1. Pull the **Hawkjaw** onto the pipe.
2. Press in the **Grip Hold** (GH) button.
3. **Press and hold** the **Spin** (S) button. While holding down the **Spin** (S) button, **press and hold** the **Chain Oiler** (CO) button for **3 seconds**.
4. **Release** the **Spin** (S) button.
5. Pull out the **Grip Hold** (GH) button.

CAUTION:
This chain oiling system uses minimal amount of hydraulic oil from power unit - we suggest you monitor hydraulic oil level accordingly.





Chain oiler nozzle

NOTE: Clean nozzle screen as required

Spinner Maintenance

Grease Once per Month

Tools Required

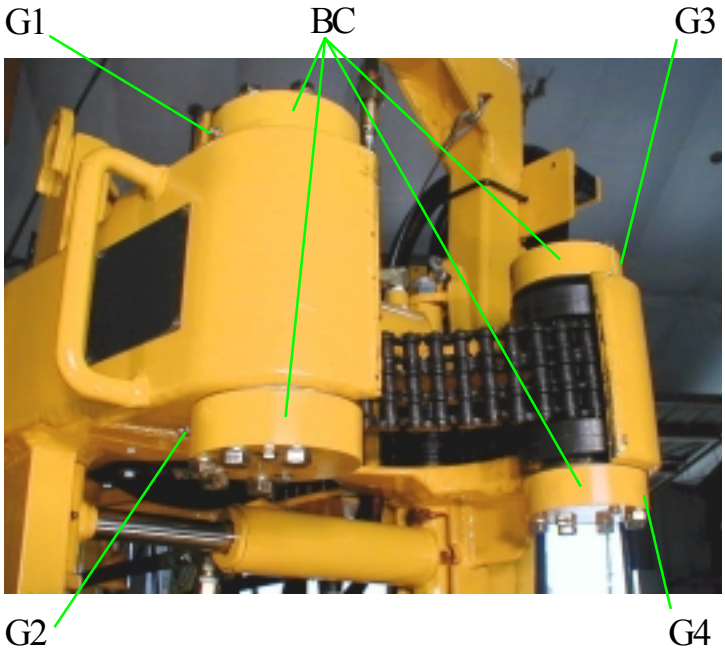
Grease gun, 7/16" wrench

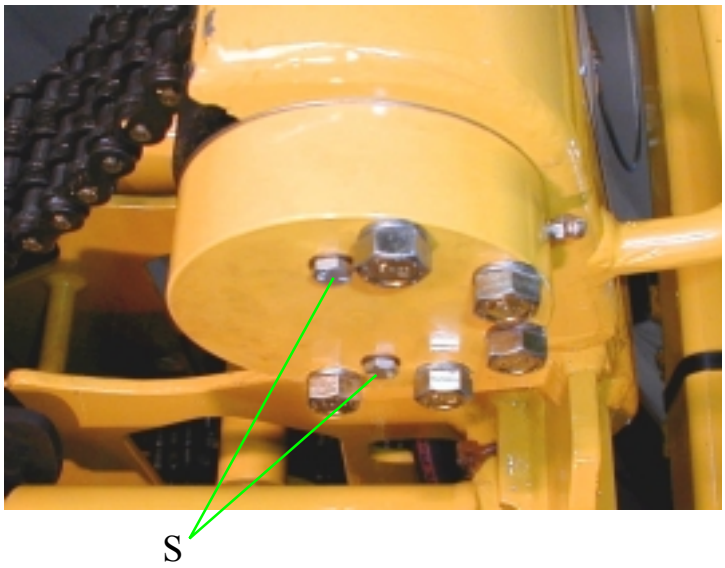
Initial Steps

1. Make sure the HawkJaw is off the drill pipe connection and in the **rest position** on the derrick.
2. **Shut down** the **Hydraulic power** unit.
3. **Press** the **Grip button repeatedly**.
4. **Disconnect** the **Air power** supply.
5. **Push in** the **"E" stop**.
6. **Assume** that there is still a **load** on every actuator. Proceed with caution.

Drive Roller Sprocket Bear-

1. Use the 7/16" wrench to **remove one of** the **four small screws** (S) from the **top** of **each bearing cap** (BC).
2. **Pump** the **grease fittings** G1-G4 until grease comes out of the small screw hole.
3. Use the 7/16" wrench to **replace** the **small screw** (S).





Part Numbers

Part Name	Part #
Bearing Cap Screw (S)	999-805834
Straight Grease Fitting	061-1103K1

Spinner Maintenance

Grease Once per Month

Tools Required

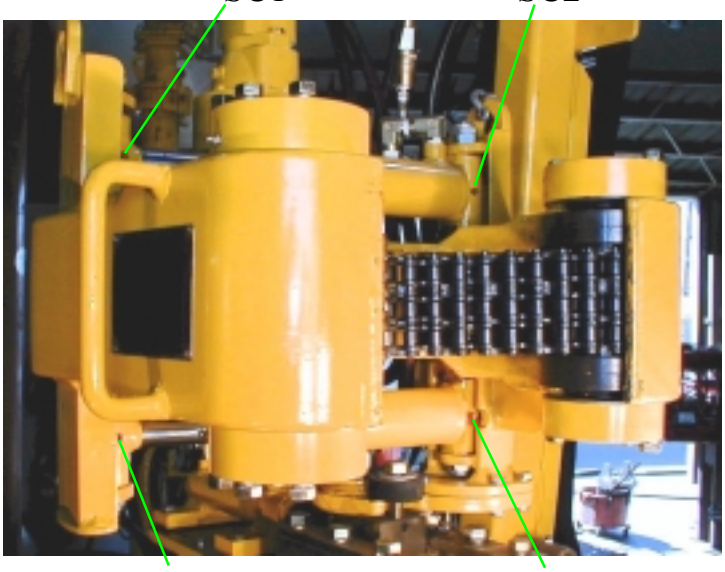
Grease gun

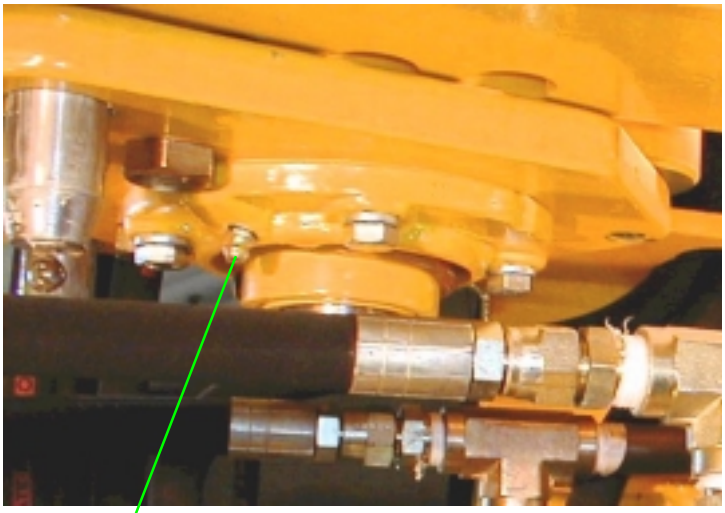
Spinner Grip Cylinders

1. **Pump grease fittings** SC1-SC4.

Chain Drive Shaft Bearing

1. **Pump grease fitting** CB1.





Spinner Maintenance

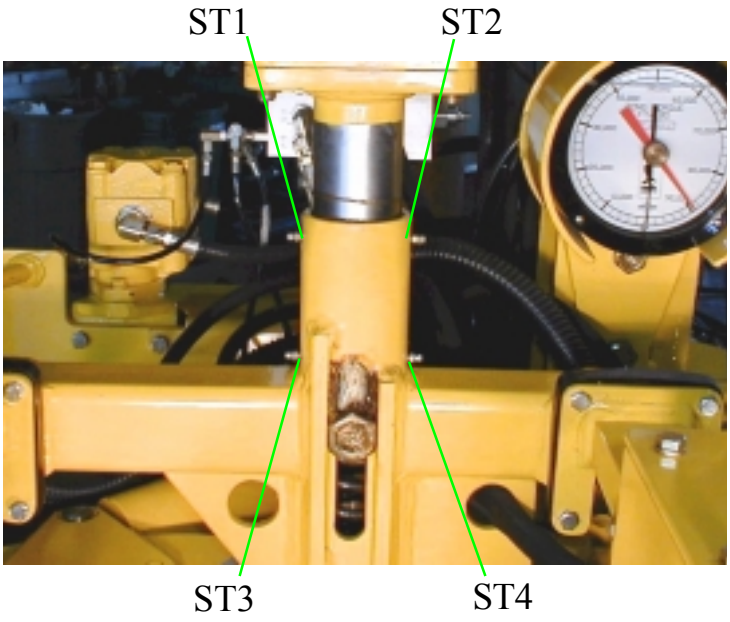
Grease Once per Month

Tools Required

Grease gun

Spinner Mount Sliding Tube

1. **Pump grease fittings** ST1-ST4.

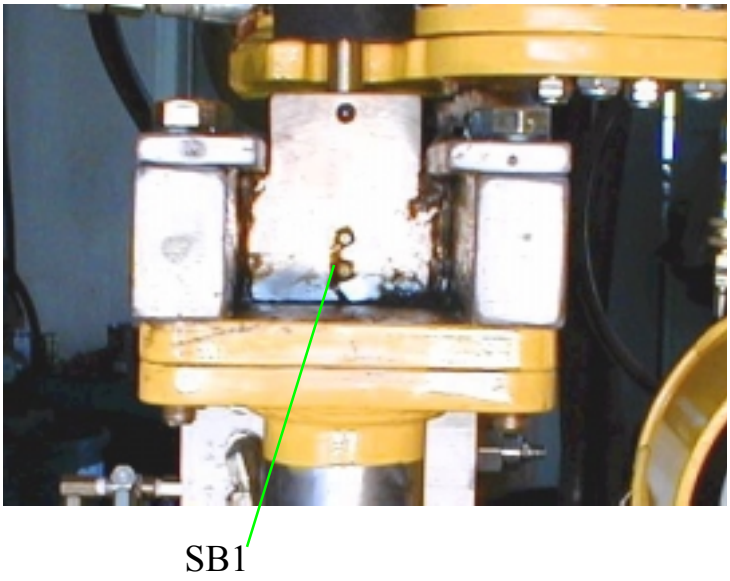


Spinner Mount Sliding Block

1. **Pump grease fittings** SB1.

NOTE

Consistent lubrication of the Spinner sliding tube and block increases performance and component life.



Spinner Maintenance

Check Oil Level Once per Month

Lubricant Required

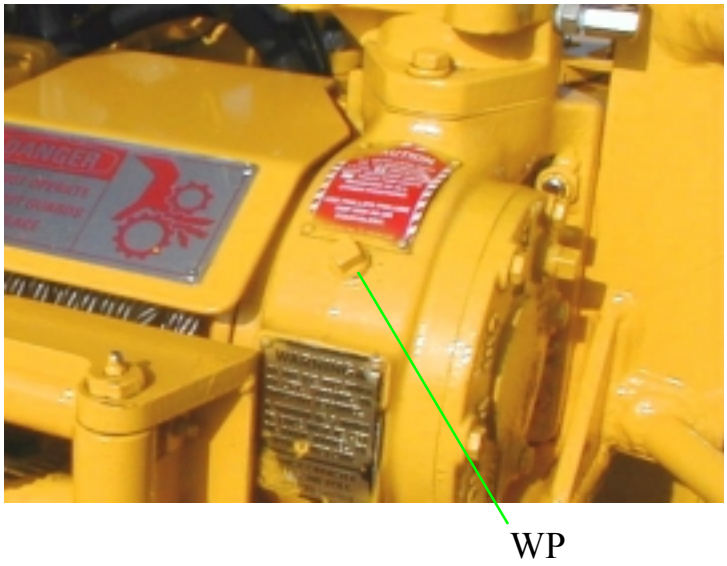
85-90 weight gear oil
SAE #AGMA5

Reducer Gear Box

1. Make sure the gear box **oil level** reaches the **top pipe plug** (RP).

Winch Gear Box

1. Make sure the gear box **oil level** reaches the **top pipe plug** (WP).



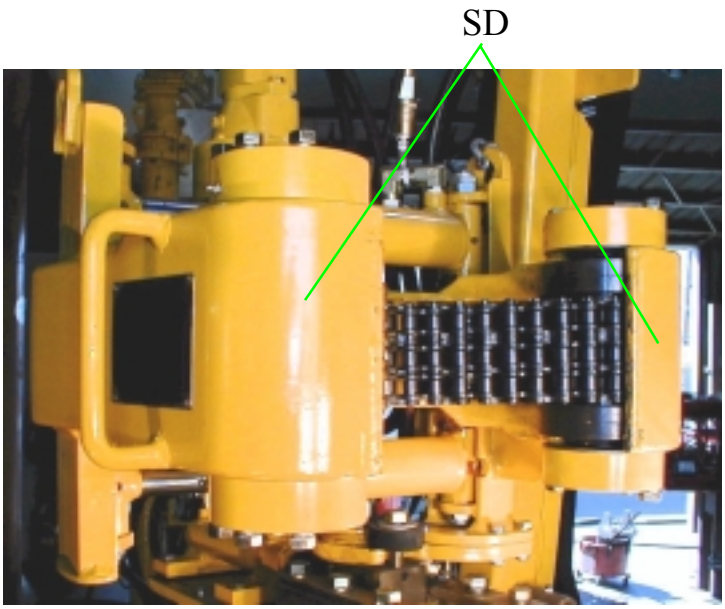
NOTE

Consistent lubrication of the Spinner and Winch increases performance and component life.

Changing the Spinner Chain

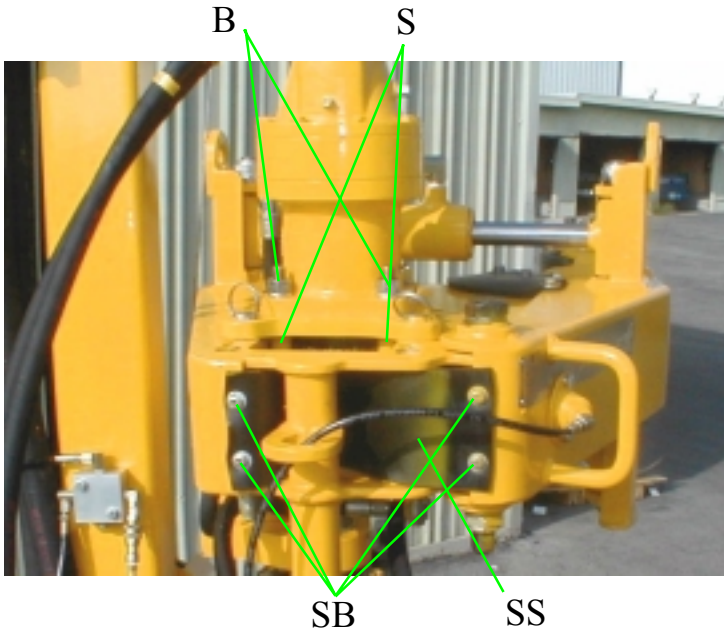
Tools Required

7/8" wrench, 7/16" wrench, Hammer, Needle-Nose Pliers



Initial Steps

1. Make sure the HawkJaw is off the drill pipe connection and in the **rest position** on the derrick.
2. **Shut down** the **Hydraulic power** unit.
3. **Press** the **Grip button repeatedly** to bleed hydraulic pressure.
4. **Disconnect** the **Air** power supply.
5. Push in the **"E" stop** (E).
6. **Assume** that there is still a **load** on every actuator. Proceed with caution.



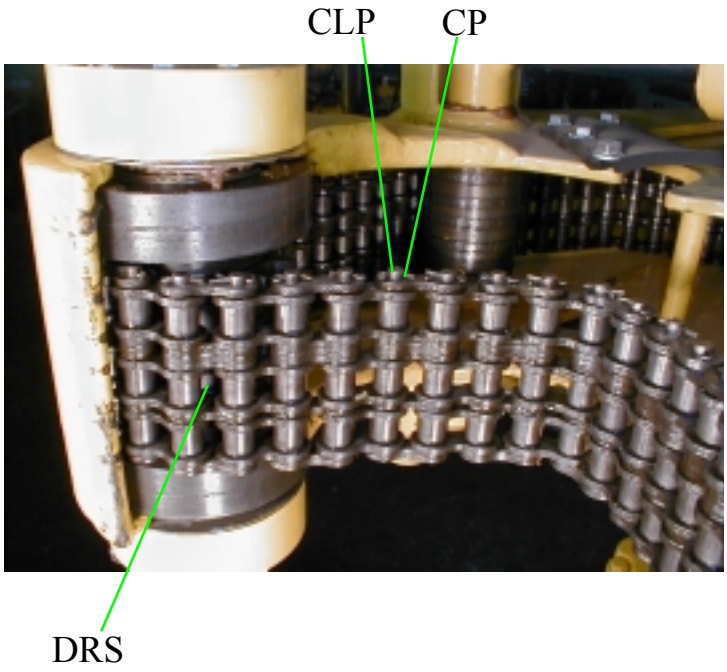
Chain

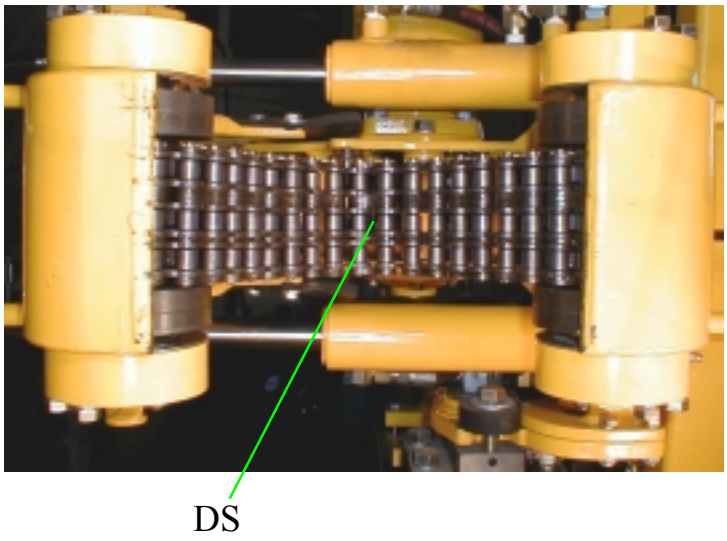
1. Make sure the **Spinner doors** (SD) are **open**.
2. Use the 7/8" wrench to **loosen** the **Spacer Bolts** (B).
3. Use the 7/16" wrench to **remove** the **four** rubber Safety shield **bolts** (SB).
4. **Remove** the rubber Safety **shield** (SS).
5. **Remove** the **Spacer Bolts** (B) and **Spacers** (S).

Continued on next page.

Changing the Spinner Chain

6. From the front of the unit, use the Needle-nose pliers to **remove** the **Cotter pins** (CP) in one of the Chain links.
7. Use the hammer to **remove** the **Chain link pin** (CLP).
8. **Pull out** the **old chain**. Make sure the chain does not catch on the Drive Sprocket (DS).
9. **Feed** the **chain** into the spinner **behind** the **Drive Sprocket** (DS) until both ends of the new chain meet at the Drive roller sprockets (DRS).
10. **Feed** the **ends** of the **chain** around the **outside** of the **Drive roller sprockets** (DRS).
11. **Place** the **ends** of the new chain **together**.
12. **Insert** the **Master Link**.
13. **Place** the **End Cap** on the **Master Link**.
14. Use the Needle-nose pliers to **insert** the Master Link **Cotter Pins**.





Part Numbers

Part Name	Part #
Chain	031-25CHAIN
Chain Repair Kit	031-24CHAIN-RK

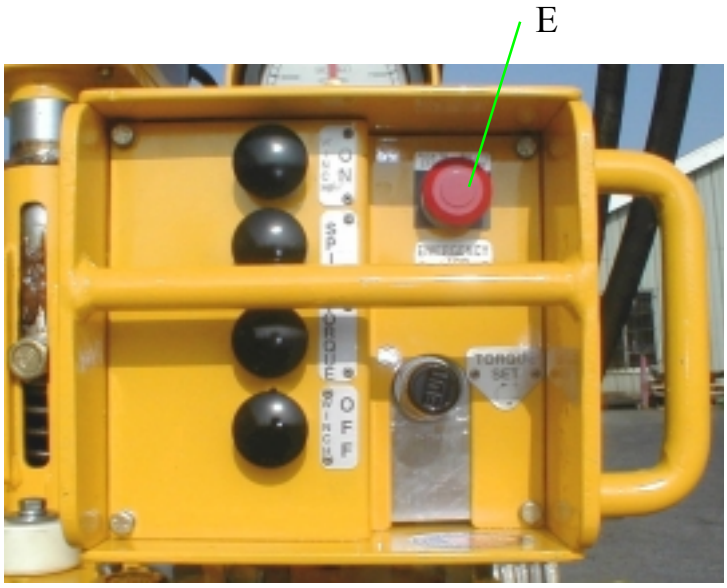
WARNING

Running a new chain with worn Drive Rollers severely shortens chain life. If the **Drive Roller Groove** is **no longer visible**, **replace** the **Drive Roller**.

Changing the Drive Rollers

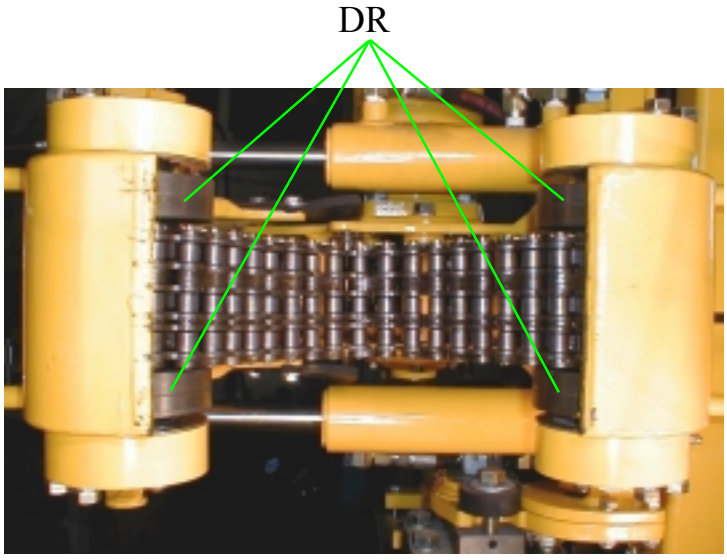
Tools Required

3/4" wrench



Initial Steps

1. Make sure the HawkJaw is off the drill pipe connection and in the **rest position** on the derrick.
2. **Shut down** the **Hydraulic power** unit.
3. **Press** the **Grip button repeatedly** to bleed hydraulic pressure.
4. **Disconnect** the **Air** power supply.
5. **Press** the **Grip button repeatedly** to bleed hydraulic pressure.
6. Push in the **"E" stop** (E).
7. **Assume** that there is still a **load** on every actuator. Proceed with caution.



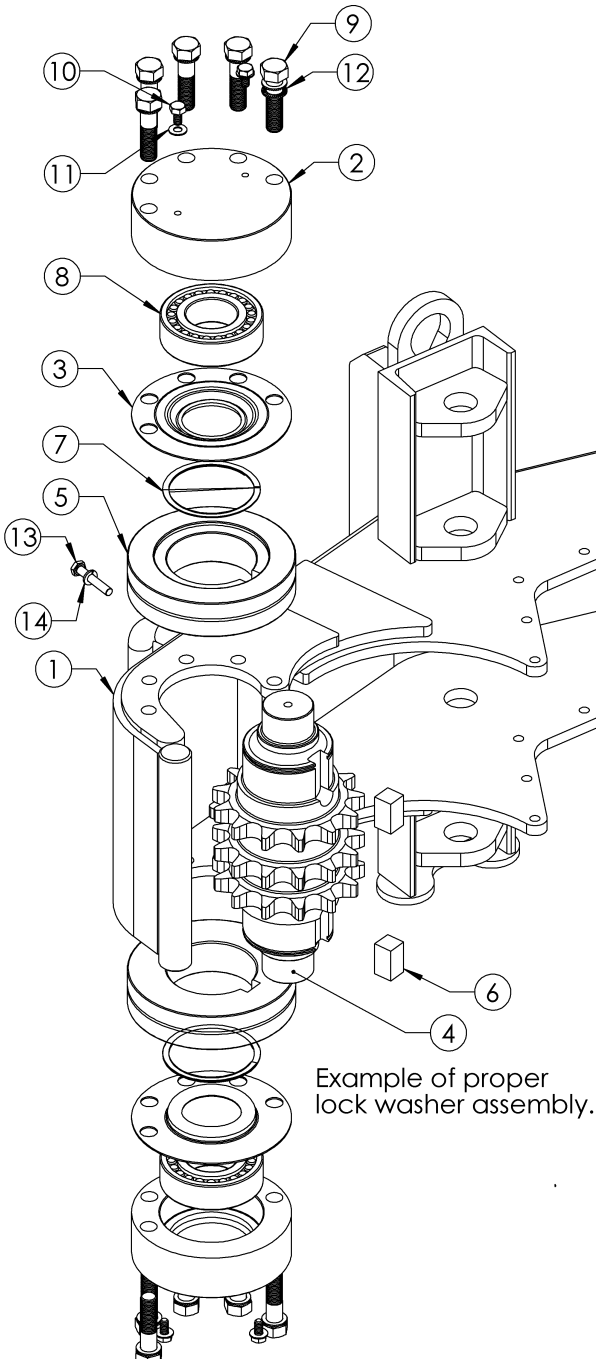
Drive Rollers

1. Make sure the Drive **Roller Groove** is **no longer visible** on the Drive Rollers (DR).

Continued on next page.

Changing the Drive Rollers

2. Use the 3/4" wrench to **remove** all Bearing Cap **Bolts** (9).
3. **Remove** the Bearing **Caps** (2) **and** Bearing **Seals** (3).
4. **Slide out** the **Drive Roller Sprockets** (4).
5. **Remove** the Drive Roller **Snap Rings** (7).
6. **Remove** the **Drive Rollers** (5) **and Keys** (6).
7. **Slide on** the **new Drive Rollers** and **replace** the **Keys** (6).
8. **Replace** the Drive Roller **Snap Rings** (7).
9. **Slide in** the **Drive Roller Sprockets** (4) . **Make sure** the **"T"** on each Drive Roller Sprocket **faces up**.
10. **Replace** the Bearing **Caps** (2) and Bearing Seals (3).
11. Use the 3/4" wrench to **replace** all Bearing Cap **Bolts** (9). Use new Lock Washers (12) and red loctite when replacing the Bearing Cap Bolts (9). **Assemble** the **Lock Washers** (12) **as shown**. **Torque** Bearing Cap **Bolts** (9) to 75 lb. ft.



Example of proper lock washer assembly.

Part Numbers

Part Name	Part #
Bearing Cap Bolt (9)	999-806373
Lock Washers (12)	031-91074A033
Drive Roller (5)	031-24649
Bearing Seal (3)	031-24654

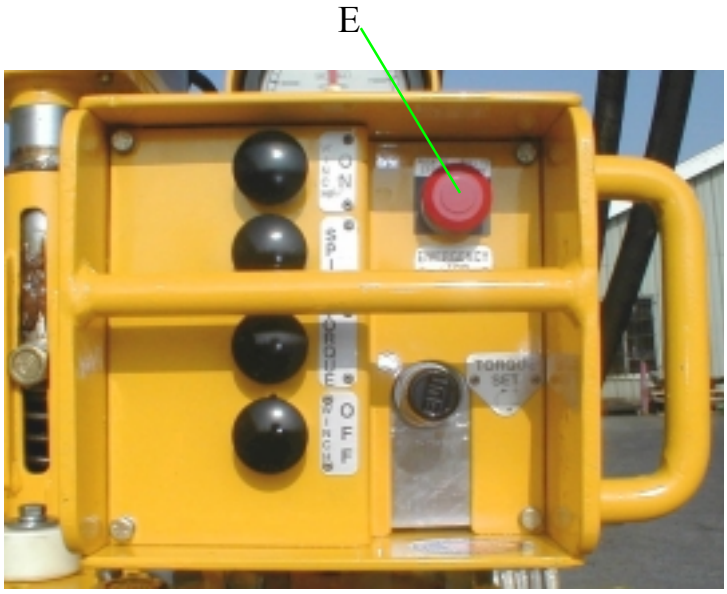
WARNING

Replace all four Drive Rollers. **Running** the **Spinner with worn Drive Rollers will damage** the **chain** and **hinder** Spinner **performance**.

Changing the Drive Roller Sprocket Bearings

Tools Required

Four 1/4"-20 x 1 1/2" Hex Tap SS (Part # 999-805867), 7/16" wrench, 3/4" wrench



Initial Steps

1. Make sure the HawkJaw is off the drill pipe connection and in the **rest position** on the derrick.
2. **Shut down** the **Hydraulic power** unit.
3. **Press** the **Grip button repeatedly** to bleed hydraulic pressure.
4. **Disconnect** the **Air** power supply.
5. Push in the **"E" stop** (E).
6. **Assume** that there is still a **load** on every actuator. Proceed with caution.

Drive Roller Sprocket Bear-

1. Use the 3/4" wrench to **remove** all Bearing Cap **Bolts** (9).
2. **Remove** the Bearing **Caps** (2) and Bearing Seals (3).
3. Use the 7/16" wrench to remove the four small screws in the top of the Bearing Caps (2).

Continued on next page.

Changing the Drive Roller Sprocket Bearings

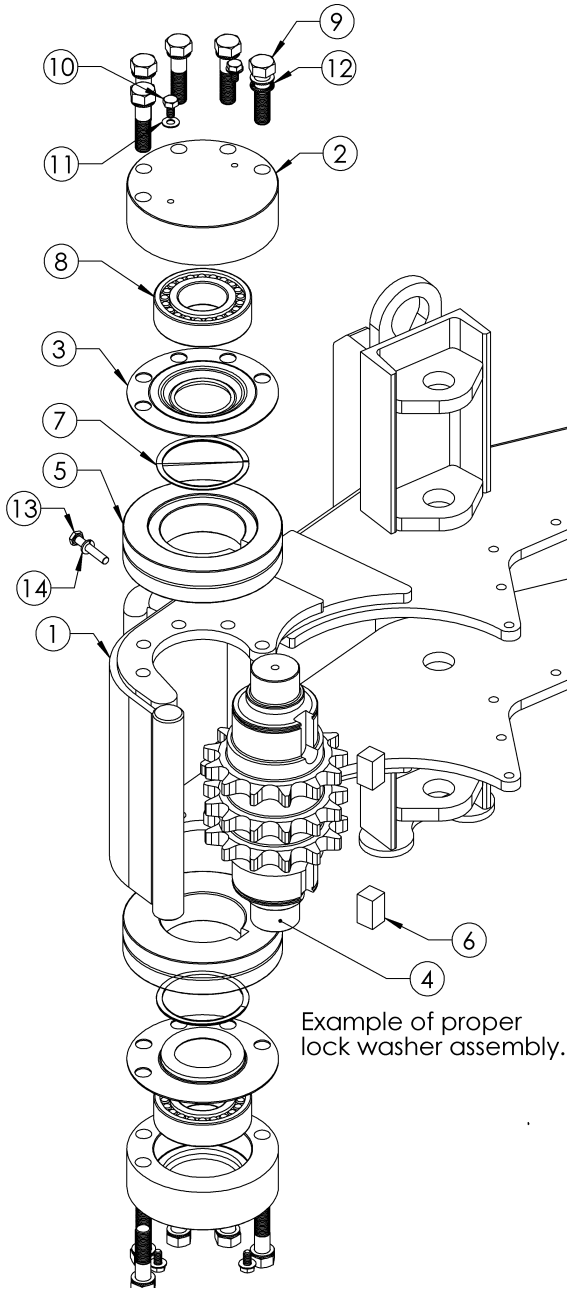
4. Use the 7/16" wrench to **screw** in the **Hex Tap screws into** the four small **threaded holes in** the **top of** the **Bearing Caps** (2). As the screws tighten, the bearing (8) is pushed out. **Tighten** the **Hex Tap screws evenly**, or the bearing (8) will tilt and lodge in the bearing cap (2).
5. **Insert** the **new bearings** into the Bearing Caps (2).
6. **Replace** the Bearing **Caps** (2) and Bearing Seals (3).
7. Use the 3/4" wrench to **replace** all Bearing Cap **Bolts** (9). Use new Lock Washers (12) and Red Loctite when replacing the Bearing Cap Bolts (9). **Assemble** the **Lock Washers** (12) **as shown**. **Torque** Bearing Cap **Bolts** (9) to 75 lb. ft.

NOTE

Hawk recommends that all four bearings (8) be replaced each time a bearing (8) is changed. Always use new lock washers (12) when replacing bearing cap bolts (9).

NOTE

Hawk recommends that all four bearing seals (3) be replaced each time a bearing (8) is changed.



Example of proper lock washer assembly.

Part Numbers

Part Name	Part #
Hex Tap Screw	999-805867
Bearing Cap Bolt (9)	999-806373
Lock Washers (12)	031-91074A033
Bearing Seal (3)	031-24654
Bearing (8)	031-24731

Changing the Torque Cylinder

Initial Steps

1. Make sure the HawkJaw is off the drill pipe connection and in the **rest position** on the derrick.

Torque Cylinder

1. Press **Grip Hold** (GH).
2. Press and hold **Grip** (G)
3. While holding down **Grip** (G), press and hold down **Torque** (T) until the Torque Cylinder Rod Pin (P) extends out from underneath the Reset Cam (RC).
4. **Release** both **Torque** (T) and **Grip** (G), and **immediately push in** the **"E" stop** (E). The Torque Cylinder (C) will freeze and remain partially extended.
5. **Shut down** the **Hydraulic power** unit. **Press** the **Grip button repeatedly** to bleed hydraulic pressure. **Proceed with caution**. Make sure no bodily parts are in the extension path of the cylinder bore.

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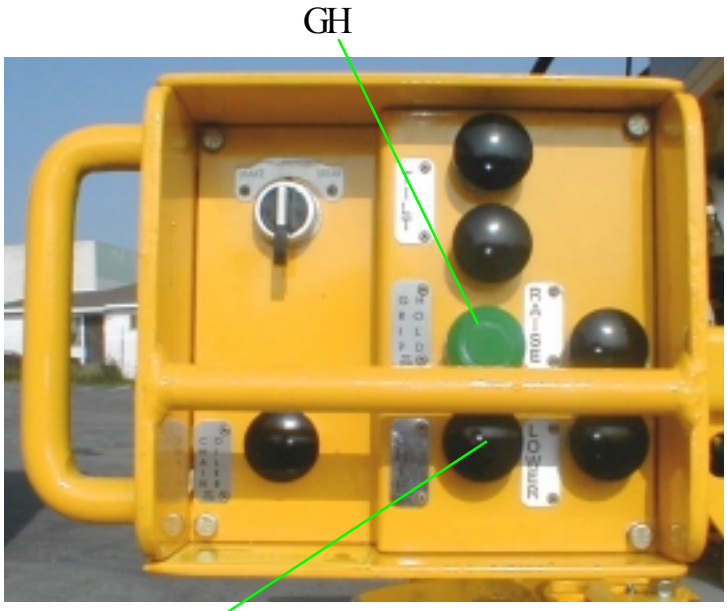

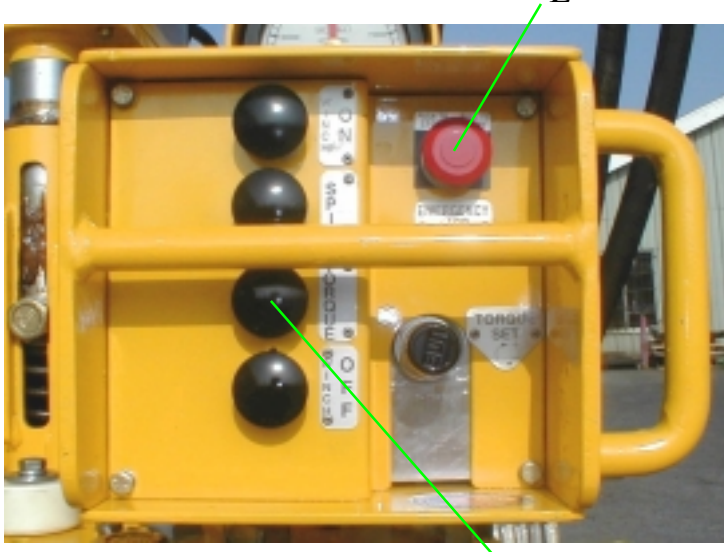

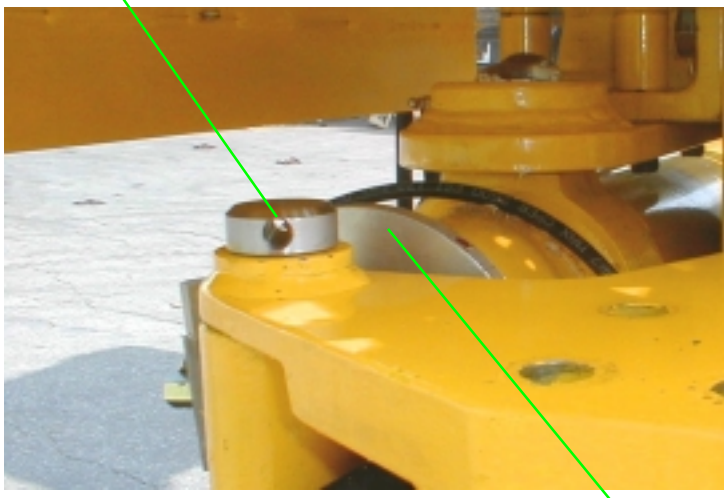

Changing the Torque Cylinder

6. Use the 1 1/8" wrench to **slowly loosen** the **Cap** side **Hoses** (CH1), (CH2). **Check** for **fluid flow**. **Bleed** any **pressure**. **Disconnect** the **Cap** side **Hoses** (CH1), (CH2).
7. Use the 1" wrench to **slowly loosen** the **Rod** side **Hose** (RH). **Check** for **fluid flow**. **Bleed** any **pressure**. **Disconnect** the **Rod** side **Hose** (RH).
8. **Pull** out the Torque Cylinder **Safety Clip** (SC).
9. Use the Torque Cylinder **Safety Clip** (SC) to **pull** out the **Torque Cylinder Rod Pin** (P).
10. Disconnect the **Low** Torque Warning System **Hydraulic Hoses** (HH & HH1).
11. Use the 1 1/8" wrench and 5/8" Allen wrench to **remove** the **Top Torque Cylinder Mount Bolts** (TBH), (TBA).
12. Use the 1 1/8" wrench to **remove** all Four **Bottom Torque Cylinder Mount Bolts** (BB).
13. **Slide out** the **Torque Cylinder** (C).
14. **Remove** the **Bottom** Trunion Mount **Plate** (BMP) and the **Top** Trunion Mount **Plate** (TMP).

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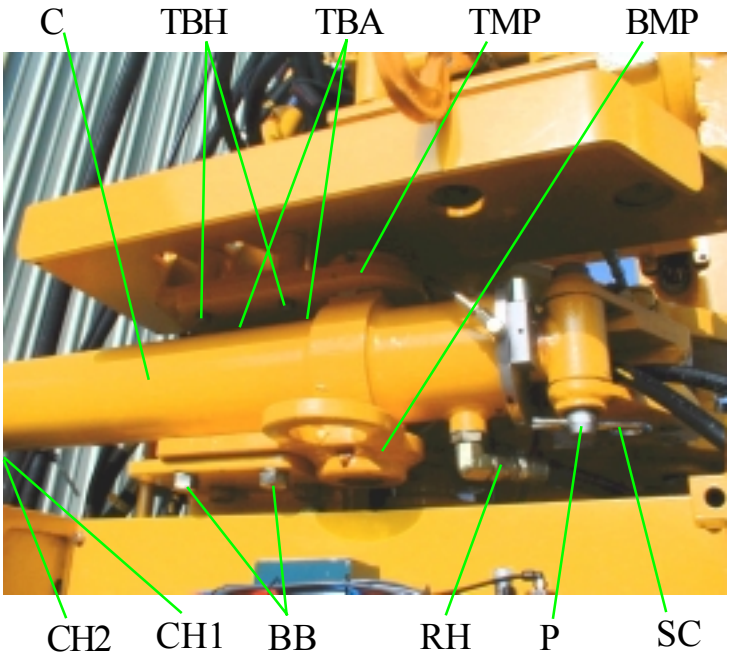
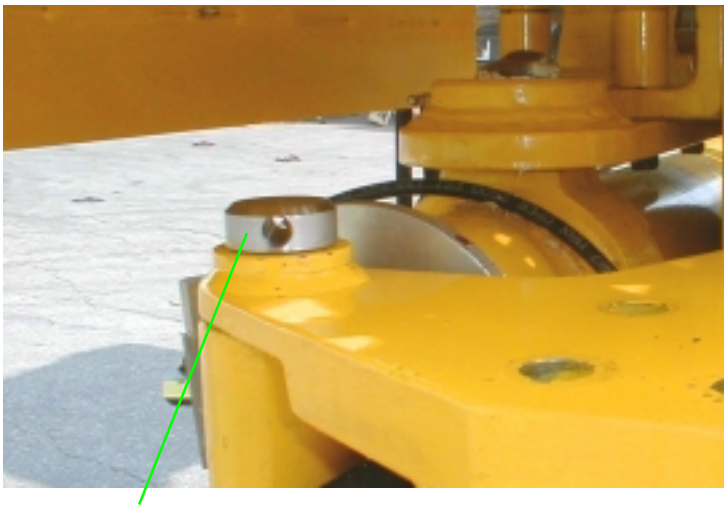
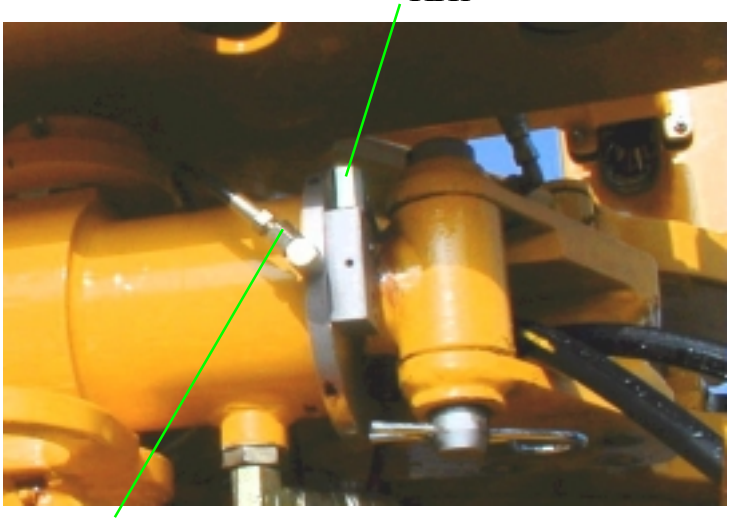
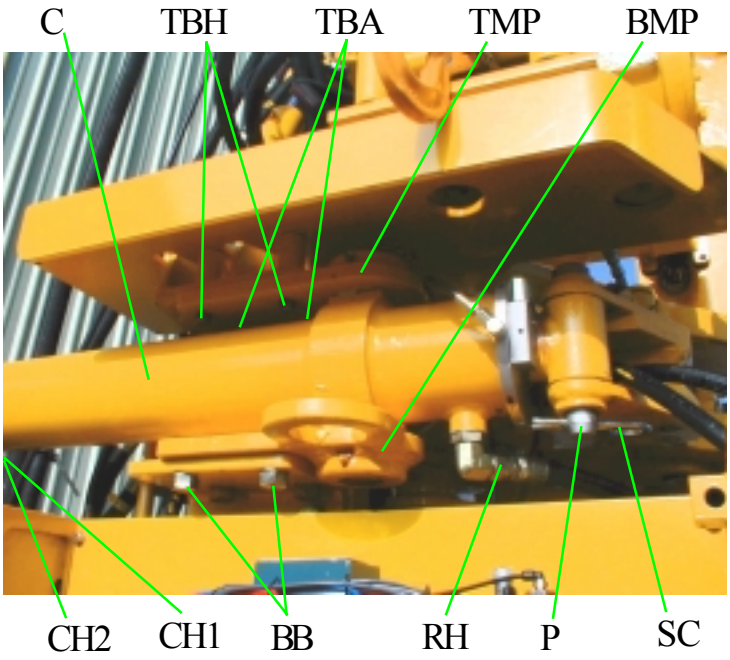


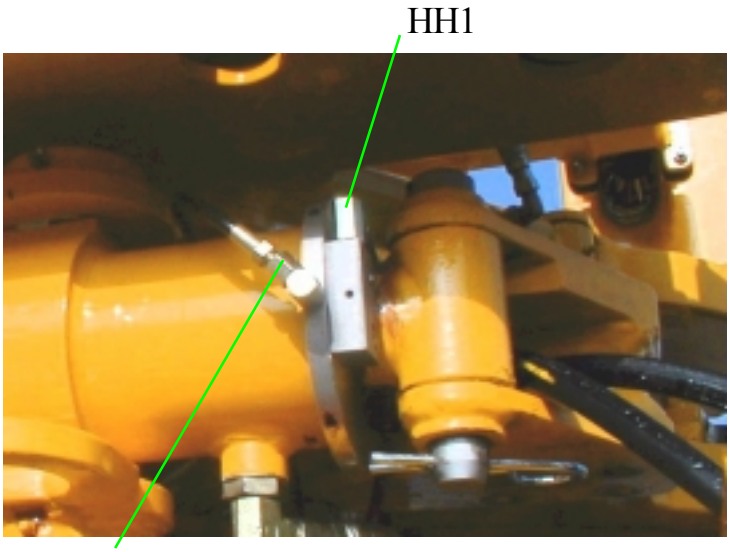


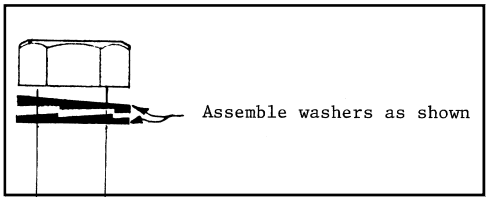


Changing the Torque Cylinder

15. Use air pressure or manual force to **extend** the **new** Torque Cylinder **Rod** to the **length** of the **old** Torque Cylinder Rod.
16. **Place** the **Bottom** Trunion Mount **Plate** (BMP) and **Top** Trunion Mount **Plate** (TMP) on the **new Torque Cylinder**.
17. **Slide in** the **new Torque Cylinder**.
18. Use the 1 1/8" wrench to **replace** the **Bottom** Torque Cylinder **Mount Bolts** (BB). Use new Lock Washers and red loctite when replacing the Bottom Torque Cylinder Mount Bolts (BB). Assemble the Lock Washers as shown.
19. Use the 1 1/8" wrench and 5/8" Allen wrench to **replace** the **Top** Torque Cylinder **Mount Bolts** (TBH), (TBA). Use new Lock Washers and red loctite when replacing the Top Torque Cylinder Mount Bolts (TBH), (TBA). Assemble the Lock Washers as shown.
20. Connect the **Low** Torque Warning System **Hydraulic Hoses** (HH &HH1).

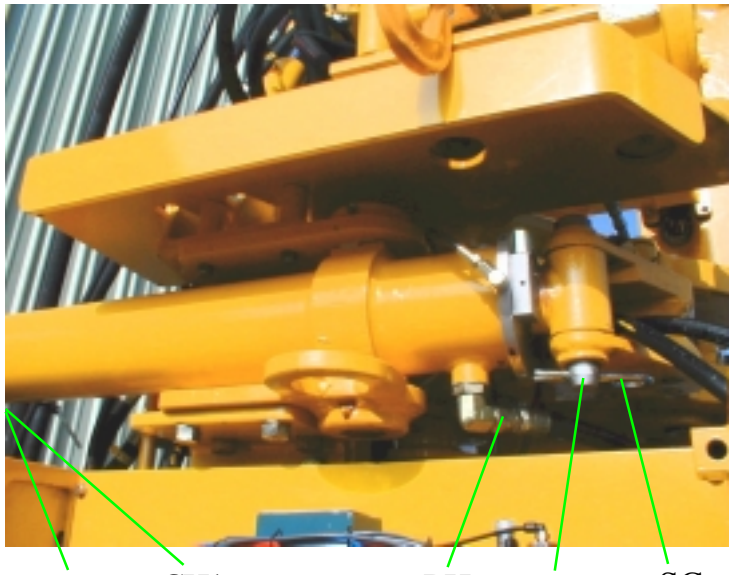


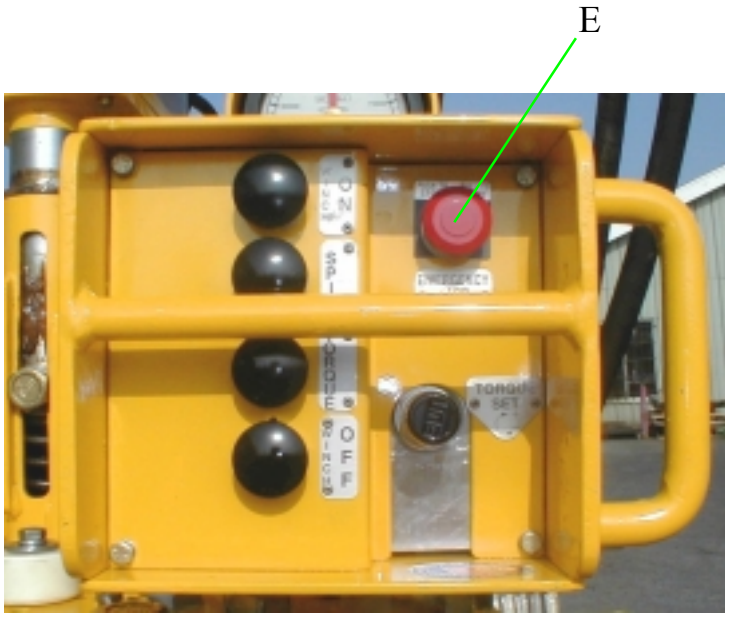




Changing the Torque Cylinder

21. Use the 1" and 1 1/8" wrench to **connect** the **Rod** side **Hose** (RH) and the **Cap** side **Hoses** (CH1), (CH2).
22. **Insert** the Torque Cylinder **Rod Pin** (P).
23. **Insert** the Torque Cylinder **Safety Clip** (SC).
24. **Make sure no bodily parts are in** the **retract path** of the Torque Cylinder. **Turn on** the **hydraulic power** unit. **Pull out** the **"E" stop**. The Middle wrench will retract.





Part Numbers

Part Name	Part #
Mount Bolt (TBH)	999-806542-1
Mount Bolt (TBA)	999-806542
Mount Bolt (BB)	999-806529
Lock Washers	061- 91074A036
Safety Clip (SC)	061- 98335A114
Torque Cylinder Rod Pin (P)	061-20204
Torque Cylinder (C)	061-H17

WARNING

Make sure the Torque Cylinder Rod and Cap side Hoses are properly connected.

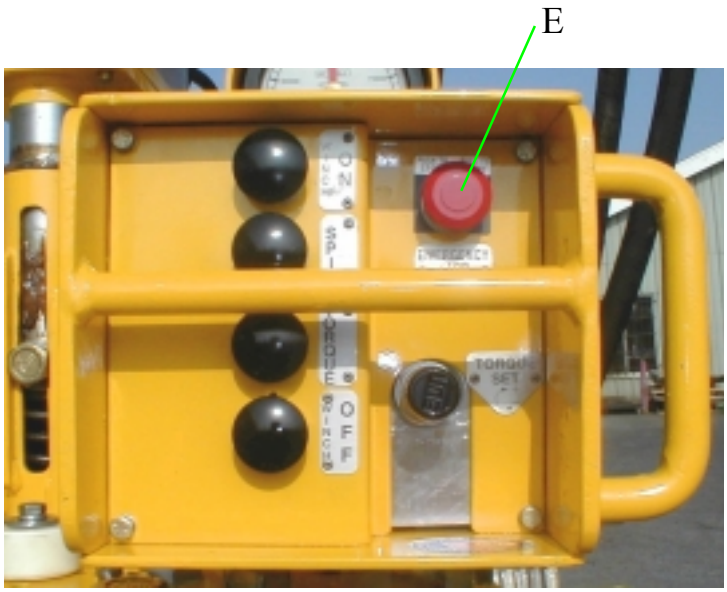
WARNING

Make sure the Low Torque Warning System Hydraulic Hoses are securely connected.

Changing the Grip Cylinders

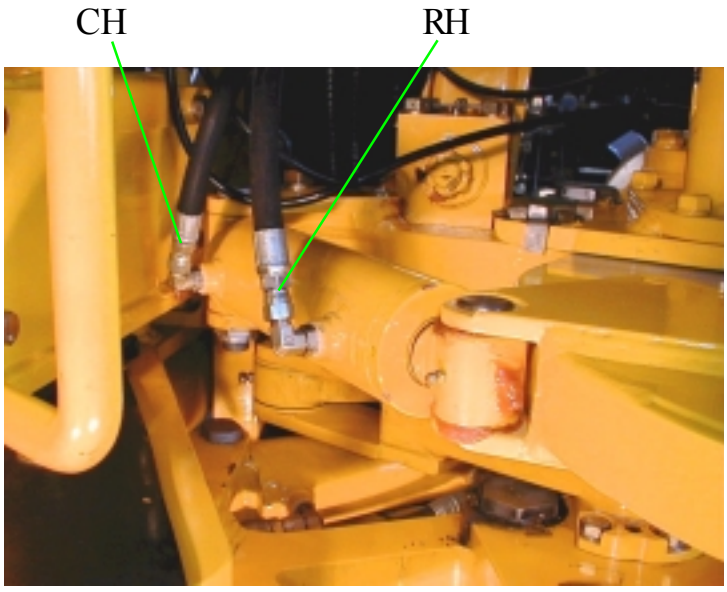
Tools Required

Two 11/16" wrenches, Two 1 1/2" wrenches



Initial Steps

1. Make sure the HawkJaw is off the drill pipe connection and in the **rest position** on the derrick.
2. **Shut down** the **Hydraulic power** unit.
3. **Press** the **Grip button repeatedly** to bleed hydraulic pressure.
4. **Disconnect** the **Air** power supply.
5. Push in the **"E" stop** (E).
6. **Assume** that there is still a **load** on every actuator. Proceed with caution.



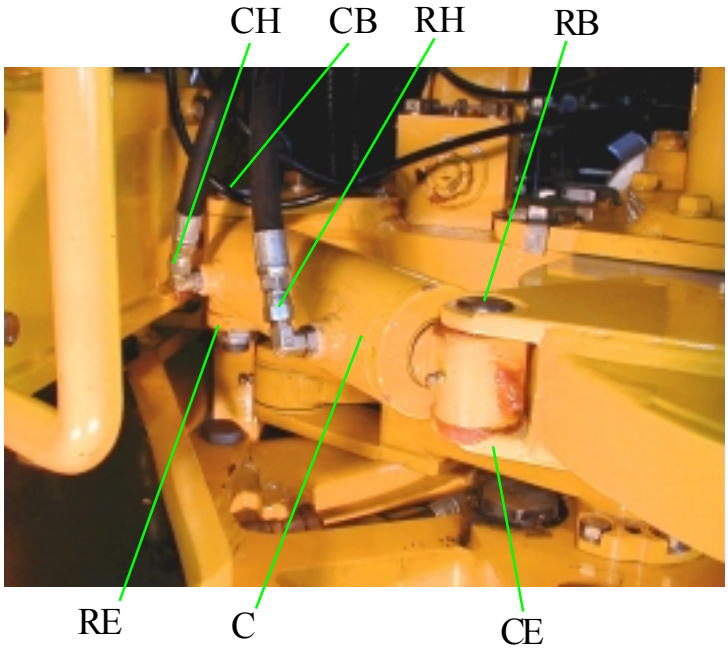
Top Grip Cylinder

1. Use the Two 11/16" wrenches to **slowly loosen** the **Rod** side **Hose** (RH). **Check** for **fluid flow**. **Bleed** any **pressure**. **Disconnect** the **Rod** side **Hose** (RH).
2. Use the Two 11/16" wrenches to **slowly loosen** the **Cap** side **Hose** (CH). **Check** for **fluid flow**. **Bleed** any **pressure**. **Disconnect** the **Cap** side **Hose** (CH).

Continued on next page.

Changing the Grip Cylinders

3. Use the Two 1 1/2" wrenches to remove the Grip Cylinder **Cap** side **Bolt** (CB) and Flex Lock Nut.
4. Use the 1 1/2" wrench to remove the Grip Cylinder **Rod** side **Pin** (RP).
5. **Slide out** the **Grip Cylinder** (C).
6. **Place** the **new Grip Cylinder** into the **Cap** side **Eye** (CE) and **Rod** side **Eye** (RE).
7. Use the Two 1 1/2" wrenches to **replace** the Grip Cylinder **Cap** side **Bolt** (CB) and Flex Lock Nut.
8. **Replace** the Grip Cylinder **Rod** side **Bolt** (RB). Assemble with cotter pin.
9. Use the Two 11/16" wrenches to **connect** the **Cap** side **Hose** (CH).
10. Use the Two 11/16" wrenches to **connect** the **Rod** side **Hose** (RH).



Part Numbers

Part Name	Part #
Grip Cylinder Cap Bolt (CB)	999-806628
Flex Lock Nut	999-806594-500
Grip Cylinder Rod Bolt (RB)	061-20270
Cotter Pin	061-98401A446
Lock Washers	061-91074A038
Grip Cylinder (C)	061-H18

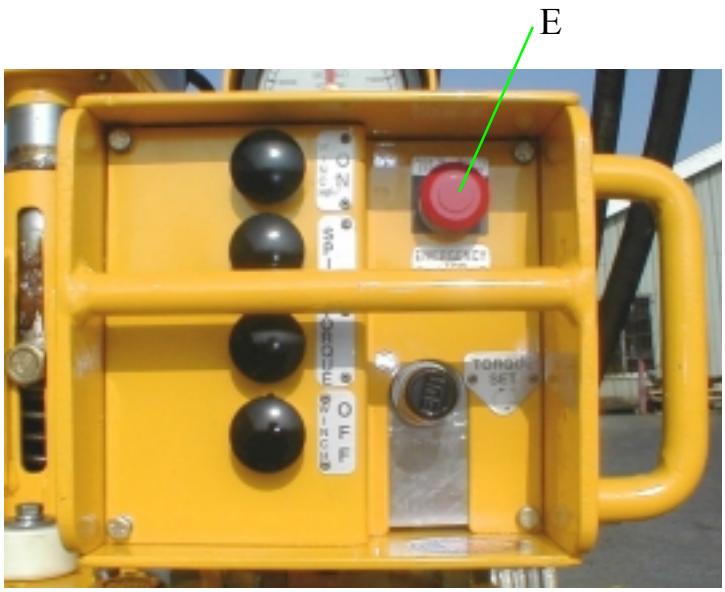
WARNING

Make sure the Grip Cylinder Rod and Cap side Hoses are properly connected. See Drawings.

Changing the Grip Cylinders

Tools Required

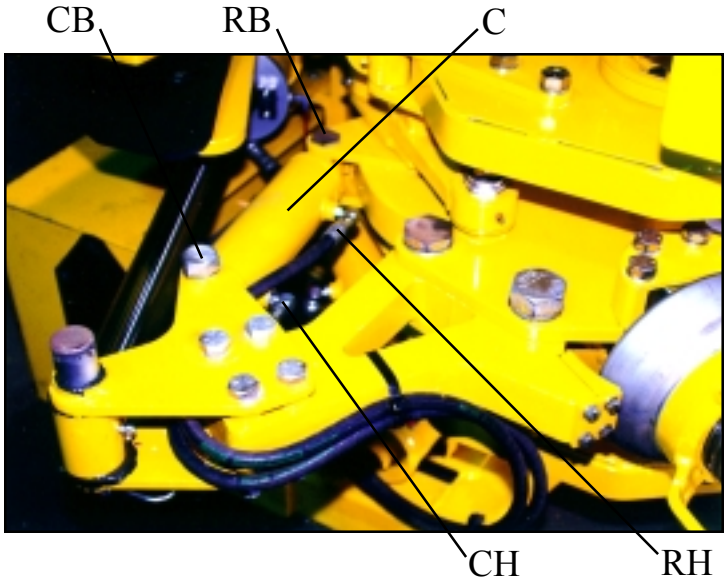
Two 11/16" wrenches, Two 1 1/2" wrenches



Initial Steps

1. Make sure the HawkJaw is off the drill pipe connection and in the **rest position** on the derrick.
2. **Follow Steps 1-4 on p. 52.**

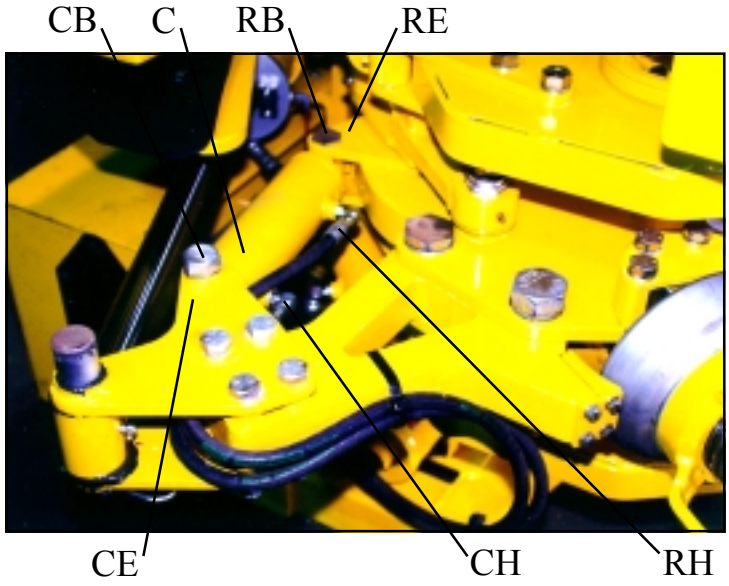
Middle Grip Cylinder

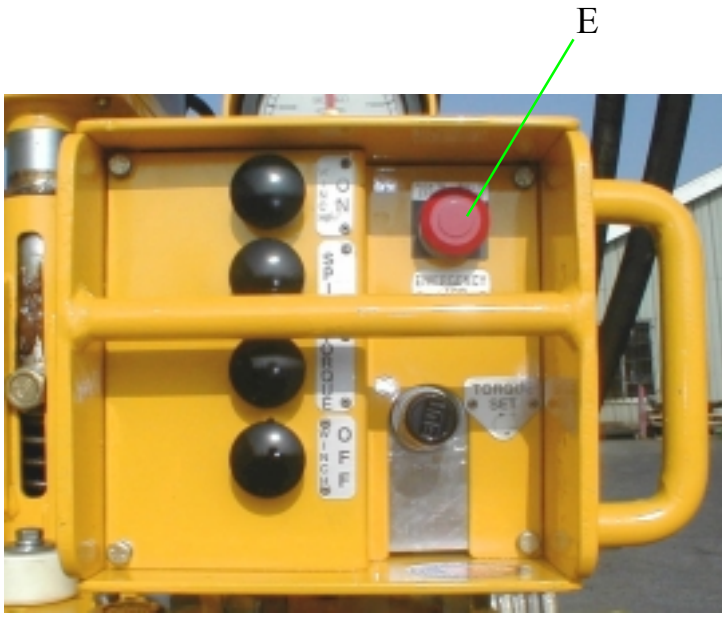


1. Use the Two 11/16" wrenches to **slowly loosen** the **Rod** side **Hose** (RH). **Check** for **fluid flow**. **Bleed** any **pressure**. **Disconnect** the **Rod** side **Hose** (RH).
2. Use the Two 11/16" wrenches to **slowly loosen** the **Cap** side **Hose** (CH). **Check** for **fluid flow**. **Bleed** any **pressure**. **Disconnect** the **Cap** side **Hose** (CH).
3. Use the Two 1 1/2" wrenches to remove the Grip Cylinder **Cap** side **Bolt** (CB) and Lock Washers.
4. Use the 1 1/2" wrench to remove the Grip Cylinder **Rod** side **Bolt** (RB) and Lock Washers.
5. **Slide out** the **Grip Cylinder** (C).

Changing the Grip Cylinders

6. **Place** the **new Grip Cylinder** into the **Cap** side **Eye** (CE) and **Rod** side **Eye** (RE).
7. Use the Two 1 1/2" wrenches to **replace** the Grip Cylinder **Cap** side **Bolt** (CB).
8. **Replace** the Grip Cylinder **Rod** side **Bolt** (RB). Assemble with cotter pin.
9. Use the Two 11/16" wrenches to **connect** the **Cap** side **Hose** (CH).
10. Use the Two 11/16" wrenches to **connect** the **Rod** side **Hose** (RH).
11. **Make sure no bodily parts are in** the **retract path** of the Torque Cylinder. **Turn on** the **hydraulic power** unit. **Pull out** the **"E" stop**. The Middle wrench will retract.





Part Numbers

Part Name	Part #
Grip Cylinder Cap Bolt (CB)	999-806627
Lock Washers	061-91074A038
Grip Cylinder Rod Bolt (RB)	061-20270
Cotter Pin	061-98401A446
Grip Cylinder (C)	061-H18S

Grip Cylinder Seals

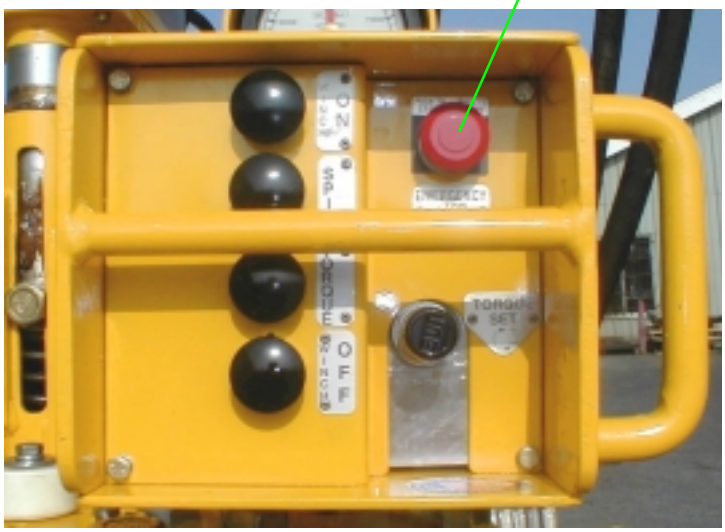
WARNING

Make sure the Grip Cylinder Rod and Cap side Hoses are properly connected. See Drawings.

Changing the Grip Cylinders

Initial Steps

1. Make sure the HawkJaw is off the drill pipe connection and in the **rest position** on the derrick.
2. **Shut down** the **Hydraulic power** unit.
3. **Press** the **Grip button repeatedly** to bleed hydraulic pressure.
4. **Disconnect** the **Air** power supply.
5. Push in the "E" stop (E).
6. **Assume** that there is still a **load** on every actuator. Proceed with caution.

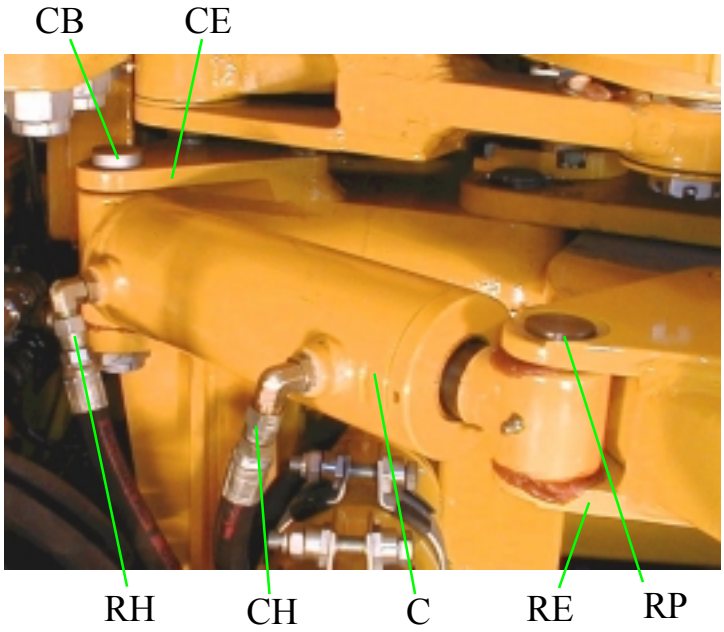


Bottom Grip Cylinder

1. Use the Two 11/16" wrenches to **slowly loosen** the **Rod** side **Hose** (RH). **Check** for **fluid flow**. **Bleed** any **pressure**. **Disconnect** the **Rod** side **Hose** (RH).
2. Use the Two 11/16" wrenches to **slowly loosen** the **Cap** side **Hose** (CH). **Check** for **fluid flow**. **Bleed** any **pressure**. **Disconnect** the **Cap** side **Hose** (CH).

Changing the Grip Cylinders

3. Use the Two 1 1/2" wrenches to remove the Grip Cylinder **Cap** side **Bolt** (CB) and Flex Lock Nut.
4. Use the 1 1/2" wrench to remove the Grip Cylinder **Rod** side **Bolt** (RB).
5. **Slide out** the **Grip Cylinder** (C).
6. **Place** the **new Grip Cylinder** into the **Cap** side **Eye** (CE) and **Rod** side **Eye** (RE).
7. Use the Two 1 1/2" wrenches to **replace** the Grip Cylinder **Cap** side **Bolt** (CB) and Flex Lock Nut.
8. **Replace** the Grip Cylinder **Rod** side **Bolt** (RB).
9. Use the Two 11/16" wrenches to **connect** the **Cap** side **Hose** (CH).
10. Use the Two 11/16" wrenches to **connect** the **Rod** side **Hose** (RH).



Part Numbers

Part Name	Part #
Grip Cylinder Cap Bolt (CB)	999-806628
Flex Lock Nut	999-806594-500
Grip Cylinder Rod Bolt (RB)	061-20270
Lock Washers	061-91074A038
Grip Cylinder (C)	061-H18S

WARNING

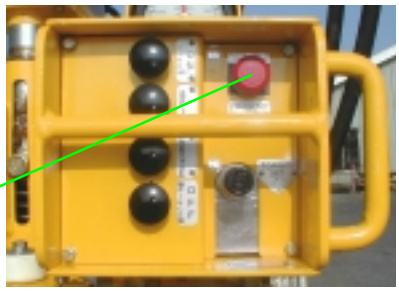
Make sure the Grip Cylinder Rod and Cap side Hoses are properly connected. See Drawings.

Grip Cylinder Seals

Main Hydraulic Block Fitting and Hose Access

Initial Steps

1. Make sure the HawkJaw is off the drill pipe connection and in the **rest position** on the derrick.
2. Use Raise (R) to raise the HawkJaw 6"-12" inches off the derrick floor.
3. **Shut down** the **Hydraulic power** unit.
4. **Press** the **Grip button repeatedly** to bleed hydraulic pressure.
5. **Disconnect** the **Air** power supply.
6. Push in the **"E" stop** (E).
7. **Assume** that there is still a **load** on every actuator. Proceed with caution.



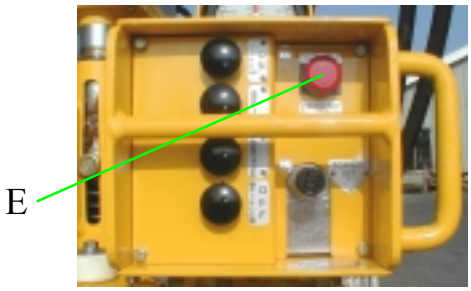
Main Block Fittings and Hoses

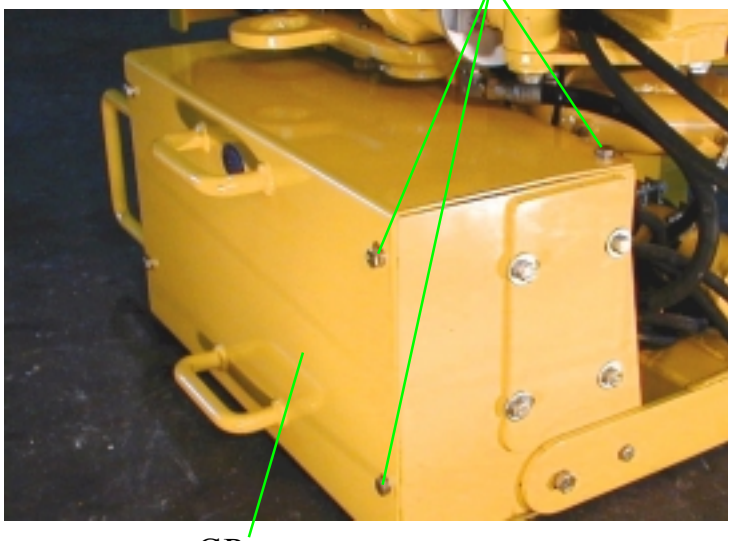
1. Use the 7/8" wrench to **remove** the Main Block Housing **Retainer Bolt** (B) and Lock Washers on each side of the Main Block Housing (H).
2. **Tilt** the Main Block **Housing** (H) **back** to expose the main block fittings and hoses.

Main Hydraulic Block Fitting and Hose Access

Initial Steps

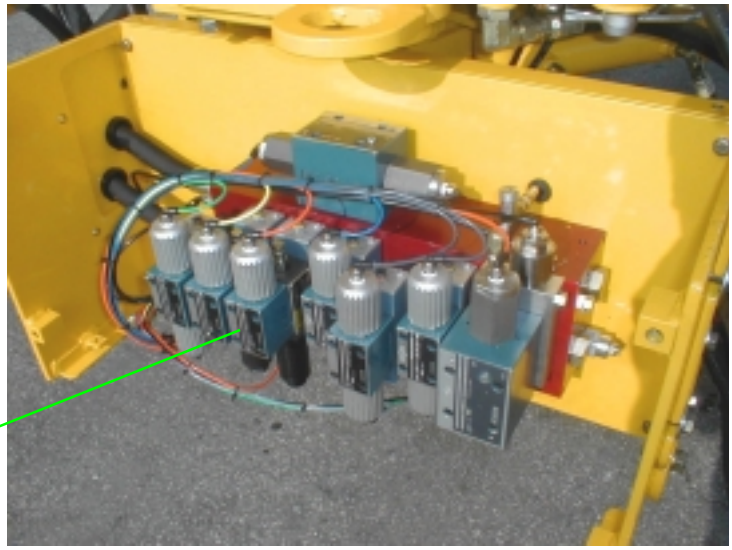
1. Make sure the HawkJaw is off the drill pipe connection and in the **rest position** on the derrick.
2. Use Raise (R) to raise the HawkJaw 3"-5" inches off the derrick floor.
3. **Shut down** the **Hydraulic power** unit.
4. **Press** the **Grip button repeatedly** to bleed hydraulic pressure.
5. **Disconnect** the **Air** power supply.
6. Push in the **"E" stop** (E).
7. **Assume** that there is still a **load** on every actuator. Proceed with caution.





Air Logic System and Main Block

1. Use the 7/8" wrench to **remove** the Main Block Housing **Cover Plate Bolts** (B) on each side.
2. **Remove** the Main Block Housing **Cover Plate** (CP) to expose the **Main Manifold** (M).



Spinner Motor Sequence Valve Access

Tools Required

3/4" wrench, 3/16" Allen wrench

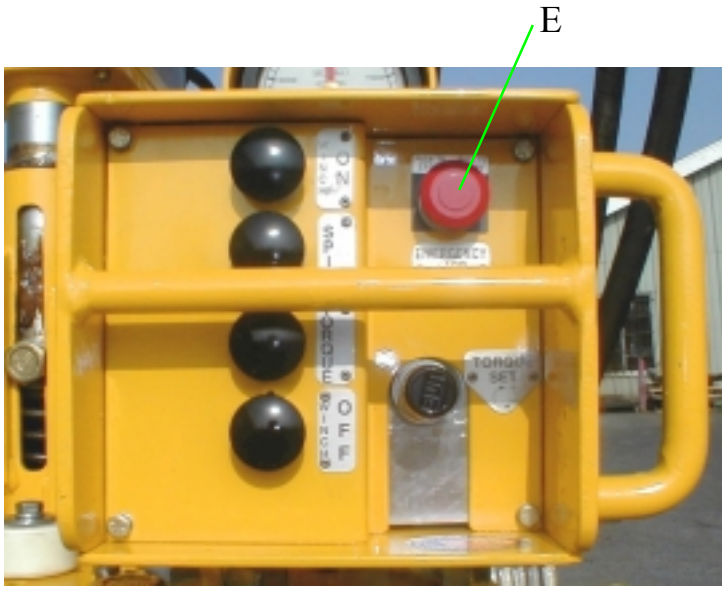
Initial Steps

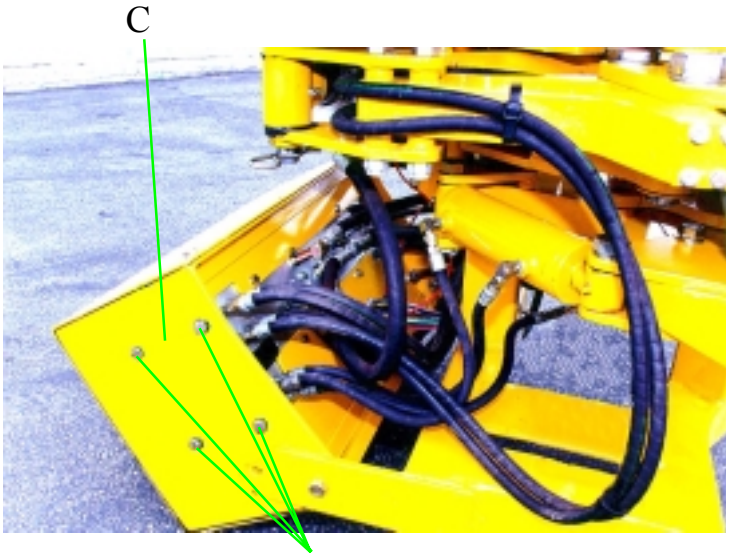
1. Make sure the HawkJaw is off the drill pipe connection and in the **rest position** on the derrick.
2. **Shut down** the **Hydraulic power** unit.
3. **Press** the **Grip button repeatedly** to bleed hydraulic pressure.
4. **Disconnect** the **Air** power supply.
5. Push in the "E" stop (E).
6. **Assume** that there is still a **load** on every actuator. Proceed with caution.

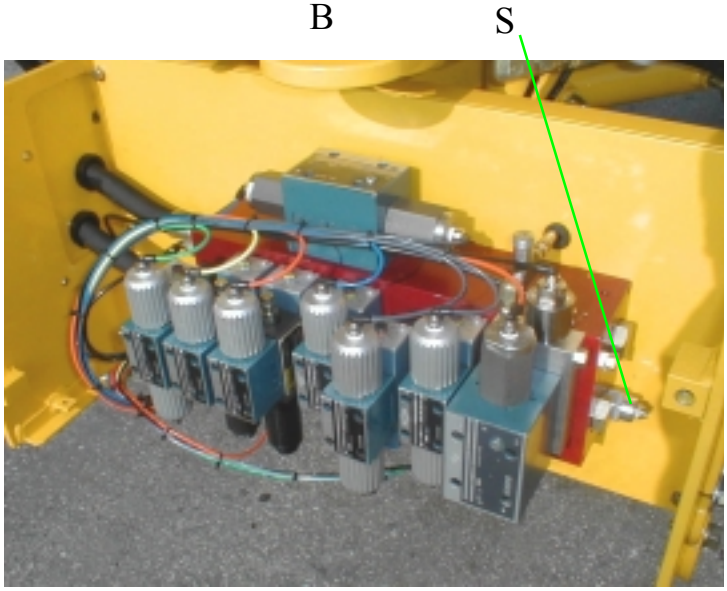
Spinner Motor Sequence Valve

1. Use the 3/4" wrench to **remove** the Sequence Valve Cover **Bolts** (B) and Cover (C).
2. The Sequence Valve is located within the Sequence Valve Rubber Sleeve (S).

Changing All Other HawkJaw Parts







Trouble Shooting

Problem	Remedy
Hose leaks.	● **Replace** the **hose**. See Drawings.
All Grip cylinders extend, and the Torque cylinder extends.	● The **Pressure** and **Tank** lines are **switched**. Properly **connect** the Pressure and Tank **lines**. See Operation.
One or more Grip cylinders extend.	● Make sure the **hydraulic power unit** is **shut down**. **Press** the **Grip** button **repeatedly** to bleed hydraulic pressure. Properly **connect** the Rod side and Cap side **hoses to** the Grip **cylinder**. See Maintenance & Repair & Drawings.
Dies do not grip pipe across from each other.	● Adjust the **wrenches** and the **pipe stop index** to the **OD** tool joint **size**. See Operation.
Dies slide on the drill pipe during make up or break out.	● Adjust the **pipe stop index** and the **wrenches** to the **OD** tool joint **size**. See Operation. ● If the **dies still slip** on the pipe while torquing, the **throat** of the **hook** could be **contacting** the **body** of the **pipe** (this can occur especially running tool joints larger than 7"). This **problem** can be **solved** by **gripping** the **Hawkjaw** on the **pipe** and **looking** to see **if** the **throat** of the **hook** is **contacting** the **pipe** body. **If** the **hook** is **contacting** the **pipe** body while gripping (not torquing), **then** the **wrench adjust nut** needs to be **adjusted slightly smaller** to get hook **throat stand-off**. ● The **dies** are **worn out**. **Replace** the **dies**. See Maintenance & Repair. ● There is a Grip cylinder piston leak. See Trouble Shooting.
While performing up to par, the Spinner clamps on the drill pipe tube, but the drill pipe does not spin.	● For break out, if the **drill pipe connection** is **not broken**, the spinner is **unable** to **spin** the drill pipe. **Break out** the **connection**, and **spin again**. See Operation.

Trouble Shooting

Problem	Remedy
Spinner pops off the drill pipe tube when the spinner rotates the pipe.	● The spinner is adjusted too small for the drill pipe tube. **Adjust** the **spinner to** the **correct pipe size**. See Operation.
Spinner Drive Rollers touch when the spinner clamps onto the drill pipe tube.	● **Adjust** the **spinner to** the **next smaller pipe size**. See Operation. **If** the **Drive Rollers still touch**, the chain is severely stretched. **Replace** the **chain**. See Maintenance & Repair.
Spinner does not slide forward on the spin mount block or does slide forward and closes prematurely and bangs on pipe body while closing.	● Grease the spinner mount sliding block first and check if symtom continues. See Maintenance & Repair, p. 47. If symtom continues, **Adjust** the **Spinner push cylinder valve** (Spin Block port V1) **slightly clock-wise** .
Spinner chain hinders the correct alignment of the HawkJaw on the pipe.	● The spinner is adjusted too small for the drill pipe. **Adjust** the **spinner to** the **correct pipe size**. See Operation.
Spinner clamps on the pipe and forces the HawkJaw back away from the pipe.	● Use an allen wrench to **tighten** the **Spinner Push cylinder pressure reducing valve adjustment counter-clockwise** until the spinner does not force the HawkJaw away from the pipe. **While holding** the pressure reducing valve **adjustment steady** with an allen wrench, **lock in** the **adjustment** by tightening the valve lock nut. The **pressure reducing valve** is **located** at **Port V1** on the **Spinner** hydraulic **block**. See Drawings.
The spinner doors do not begin to close as the spinner moves onto the pipe.	● Use an allen wrench to **rotate** the **Spinner Door sequence valve adjustment counter-clockwise** until the spinner doors begin to close as the HawkJaw moves onto the pipe. **While holding** the sequence valve **adjustment steady** with an allen wrench, **lock in** the **adjustment** by tightening the differential valve lock nut. The Spinner door **sequence valve** is **located** at **Port V2** on the **Spinner** hydraulic **block**. See Drawings.
Spinner begins to spin before the spinner doors close on the drill pipe tube.	● Use an allen wrench to **rotate** the **Spinner motor sequence valve adjustment clockwise** until the doors close before the spinner begins to spin. **While hold-ing** the sequence valve **adjustment steady** with an allen wrench, **lock in** the **adjustment** by tightening the differential valve lock nut. The

Trouble Shooting

Problem	Remedy
Spinner begins to spin before the spinner doors close on the drill pipe tube. (Cont.)	● Spinner motor **sequence valve** is **located** at **Port MSEQ** on the **main** hydraulic **block**. See Maintenance & Repair, Drawings.
Spinner moves forward and the doors close on the pipe, but the spinner does not spin.	● Use an allen wrench to **rotate** the **Spinner motor sequence valve adjustment counter-clockwise** until the doors close and the spinner begins to spin. **While holding** the sequence valve **adjustment steady** with an allen wrench, **lock in** the **adjustment** by tightening the differential valve lock nut. The Spinner motor **sequence valve** is **located** at **Port MSEQ** on the **main** hydraulic **block**. See Maintenance & Repair, Drawings.
Spinner retracts from the pipe and forces the HawkJaw back away from the pipe.	● Use an allen wrench to **rotate** the **Spinner retract needle valve adjustment counter-clockwise** until the spinner gradually opens as the spinner backs off the pipe. **While holding** the needle valve **adjustment steady** with an allen wrench, **lock in** the **adjustment** by tightening the valve lock nut. The **Spinner retract needle valve** is **located** at **Port V9** on the **Spinner** hydraulic **block**. See Drawings.
Spinner chain slips on the drill pipe tube.	● The spinner is adjusted too large for the drill pipe tube. **Adjust** the **spinner** to the **correct pipe size**. See Operation. ● The spinner **chain** is **worn out**. **Replace** the spinner **chain**. See Maintenance & Repair.
Spinner chain wears out prematurely.	● **Lubricate** the spinner **chain**. See Maintenance & Repair. ● **Running** the **spinner** with **worn Drive rollers** severely **shortens chain life**. If the Drive Roller Groove is no longer visible, **replace** the **Drive rollers**. See Maintenance & Repair. **Inspect** the **chain**. **Replace** the **chain** if the **links** are **worn flat**. See Maintenance & Repair.
Drill pipe does not rotate down to the shoulder, or Spinner performance and speed not up to par.	● The **spinner push cylinder** is **not stroke out far enough** to contact drill pipe with correct allignment. See Adjusting Spinner.

Trouble Shooting

Problem		Remedy
Spinner Performance	Drill pipe does not rotate down to the shoulder, or Spinner performance and speed not up to par. (cont.)	• **On long drill pipe tool joints of 10" or more** it may be neccessary to **remove the top wrench heel die** when breaking out drill pipe or the bottom wrench heel die holder win making up drill pipe. To do this **first remove** the **quick release pin** and **slide out die**. Make sure to **grease the die holder when replacing**.
		• The **filter element** is **clogged**. **Replace** the **filter** element. See Maintenance & Repair.
		• The **air pressure** is **low**. **Increase** the **air pressure** to the HawkJaw. See Installation.
		• Check to **make sure** the **hydraulic power unit** is producing **2500 psi at 20-35 gpm**.
		• Check to **make sure** the hydraulic power unit **pressure compensator setting** is at **2500 psi**.
		• Check that the **drill pipe connections** are **within API tolerance**.
		• The **Drive Roller Sprocket Bearings** are **worn out**. **Replace** the **Drive Roller Sprocket Bearings**. See Maintenance & Repair.
		• The **Drive Rollers** are **worn out**. If the **Drive Roller Groove** is **no longer visible**, **replace** the **Drive Rollers**. See Maintenance & Repair.
		• The Bottom Drive Shaft **Flange Bearing** is **worn out**. **Replace** the **Flange Bearing**. See Drawings.
		• The **Reducer** is **worn out**. If **properly lubricated**, the reducer is a **long term wear item**. **If all other rotating members** on the spinner **work**, **inspect** the **gears** and **bearings** in the reducer for wear. Replace where necessary. See Drawings.
		• The **Drive motor** is **worn out**. With **filtered hydraulic fluid** through a Hawk approved filter, the **Drive motor** is a **long term wear item**. **If all other rotating members** on the spinner **work**, **inspect** the **rotating group**, **bearings** and **seals** for wear. Replace where necessary. See Drawings.
HawkJaw Performance	HawkJaw performance and speed not up to par.	• **Check** that the hydraulic **filter element** is not completely full of contaminants. If the **red** indicator **button** on the hydraulic filter body pops **up**, **change** the **filter element**. See Filter Maintenance.
		• **Check** the lead-in **pressure and tank lines** for any **obstructions**. Also **check** the **quick disconnects**

Trouble Shooting

Problem	Remedy
HawkJaw performance and speed not up to par.	• to see that they are **securely tightened**. A bad quick disconnect can cause the Hawkjaw to mal-function. Replace the faulty connector. • The **air pressure** is **low**. **Increase** the **air pressure** to the HawkJaw. See Installation. • Check to **make sure** the **hydraulic power unit** is producing **2500 psi at 20-35 gpm**. • Check to **make sure** the hydraulic power unit **pressure compensator setting** is at **2500 psi**. • There is a **leak** in the **hydraulic system**. **Check** for any **visual leaks** in the hoses, fittings, manifolds, cylinder rod heads, or cylinder rod wiper seals. **Replace** necessary **components**. See Drawings. • There is a **leak** in the **hydraulic system**. **Operate** the HawkJaw. **Feel** the outside of all **actuators**. If a portion of the **cylinder surface** is **too hot** to leave your hand on the cylinder, the **leak** is **inside** the **cylinder**. **Replace** the cylinder **seals**. If necessary, replace the cylinder. For a Grip cylinder, see Maintenance & Repair. For a Spinner grip cylinder, see Drawings. For the Torque cylinder, see Maintenance & Repair. For the Raise/Lower Cylinder, see Drawings. • There is a **leak** in the **hydraulic system**. **Disconnect** the **air supply hose to the HawkJaw**. Make sure the **hydraulic power** unit is **on**. **Check** for **Grip cylinder** piston seal integrity. **Make sure no bodily parts are in the extension path of the cylinder rod. Begin with** the **Top Grip cylinder**. Slowly **loosen** the **Cap** side **hose**. **Check** for **fluid flow**. **If** there is a piston **seal leak**, fluid will flow with **volume** out of the Cap side fitting. **Replace** the **seals**. See Drawings. Replace the cylinder if necessary. See Maintenance & Repair. **Repeat** for the **Middle Grip cylinder**. See Drawings. Replace the cylinder if necessary. See Maintenance & Repair. Repeat for the **Bottom Grip cylinder**. See Drawings. Replace the cylinder if necessary. See Maintenance & Repair.

Trouble Shooting

Problem	Remedy
HawkJaw performance and speed not up to par.	• There is a **leak** in the **hydraulic system**. Make sure the **air supply hose to the HawkJaw** is **disconnected**. Make sure the **hydraulic power** unit is **on**. **Check** for **Torque cylinder** piston seal integrity. **Make sure no bodily parts are in the extension path of the cylinder rod.** Slowly **loosen** the **Cap** side **hose**. **Check** for **fluid flow**. **If** there is a piston **seal leak**, fluid will flow with **volume** out of the Cap side hydraulic fitting. **Replace** the **seals**. See Drawings. Replace the cylinder if necessary. See Maintenance & Repair. • There is a **leak** in the **hydraulic system**. Make sure the **air supply hose to the HawkJaw** is **disconnected**. Make sure the **hydraulic power** unit is **on**. **Make sure no bodily parts are in the extension path of the cylinder rod. Check** for **Spinner grip cylinder** cap side seal integrity. Slowly **loosen** the Spin Block Port SR **fitting** . **Check** for **fluid flow**. **If** there is a piston **seal leak**, fluid will flow with **volume** out of the fitting. **Replace** the **seals** if necessary. See Drawings. Replace the cylinder if necessary. See Drawings.
While in make-up mode, a desired torque setting cannot be achieved or the torque control valve will not effect the torque output of the Hawkjaw.	• The **Hawkjaw** may have an **obstructed** tank **lead-in hose** or **quick disconnect**. **Check** the **pressure** at the **tank out-put port** on the Hawkjaw main hydraulic **manifold**. Pressure **readings** should **not exceed 200 psi**. If the pressure reading is above 200 psi, **clear** the **obstruction** in the hose or **replace** the **quick-dissconnect**. Also **check belleville springs** #061-022S for correct placement or breakage. See Drawings.

Trouble Shooting

Problem	Remedy
Hydraulic fluid heats up.	• There is a **leak** in the **hydraulic system**. See Trouble Shooting.
The Raise/Lower Cylinder moves slower than usual, or the HawkJaw sinks while it hangs.	• Check to **make sure** the **hydraulic power unit** is producing **2500 psi at 20-35 gpm**. • **Check** that the HawkJaw is getting at least 100 psi **air**. • Check that the **pump pressure compensator setting** is at **2500 psi**. • **Check** that the hydraulic **filter element** is not completely full of contaminants. If the **red** indicator **button** on the hydraulic filter body pops **up**, **change** the **filter element**. See Filter Maintenance. • There is an **inner seal leak** in the cylinder. Make sure the **HawkJaw rests** on the **rig floor**. **Shut down** the **hydraulic power unit. Push** the **Grip button repeatedly to bleed** all **hydraulic pressure**. **Push in** the **"E" stop** button. **Disconnect** the **Raise/Lower cylinder Hanger Eye from** the **hanging cable.** See Installation & Drawings. **Place** the Raise/Lower cylinder **Rod** side **end on** the **rig floor**. **Pull out** the **"E" stop** button. **Turn on** the **hydraulic power** unit. **Push in** the Lower button, **and hold down** the **Lower button**. While holding down the Lower button, **check** for **Raise/Lower cylinder** piston seal integrity. **Make sure no bodily parts are in the extension path of the cylinder rod.** Slowly **loosen** the **HawkJaw Rod** side Leader **hose**. **Check** for **fluid flow**. **If** there is a piston **seal leak**, fluid will flow with **volume** out of the Rod side leader hose. **Replace** the **seals**. See Drawings. Replace the cylinder if necessary. See Drawings. **Push and hold** the **Raise button**. After the Raise/Lower cylinder has fully retracted, **check** for **Raise/Lower cylinder** piston seal integrity. **Make sure no bodily parts are in the extension path of the cylinder rod.** Slowly **loosen** the **HawkJaw Cap** side Leader **hose**. **Check** for **fluid flow**. **If** there is a piston **seal leak**, fluid will flow with **volume** out of the Cap side leader hose. **Replace** the **seals**. See Drawings. Replace the cylinder if necessary. See Drawings.

Trouble Shooting

Problem	Remedy
The Raise/Lower Cylinder moves at an undesired speed	• **Push in** the **"E" stop** button. **Access** the **main** hydraulic **block.** See Maintenance & Repair & Drawings. Use a 7/32" allen wrench to **adjust** the VR/L sandwich valve **H6 flow settings at each end**. **Rotate clockwise** to **reduce speed** and **counter-clockwise** to **increase speed** of the Raise/Lower cylinder. **Pull out** the **"E" stop** button **to test settings**. Repeat process if necessary.
The Tilt Cylinder moves at an undesired speed.	• **Push in** the **"E" stop** button. **Access** the **main** hydraulic **block.** See Maintenance & Repair & Drawings. Use a 7/32" allen wrench to **adjust** the VF/B sandwich valve **H6 flow settings at each end**. **Rotate clockwise** to **reduce speed** and **counter-clockwise** to **increase speed** of the Tilt cylinder. **Pull out** the **"E" stop** button **to test settings**. Repeat process if necessary.
The mount arms do not pivot freely.	• The mount arm thrust bearing plates are reversed. Properly **connect** the mount arm **thrust bearing plates**. See Drawings. • The mount arm **thrust bearings** are **worn out**. **Replace** the mount arm **thrust bearings**. See Drawings.
Push in the Winch On or Winch Off button, and the HawkJaw moves opposite the desired direction.	• Properly **connect** the **Winch** hoses to the Winch **Motor**. See Drawings. • Check that the Winch On and Winch Off **air hoses** are properly **connected** to the Winch **Valve**. See Drawings. • Check that the Winch On and Winch Off **air hoses** are properly **connected** in the Right control handle. See Drawings.
Winch does not operate.	• Check that the **Winch** is **engaged**. See Installation. • Make sure the "E" stop is pulled out. • Check to **make sure** the **hydraulic power unit** is producing **2500 psi at 20-35 gpm**. • **Check** that the HawkJaw is getting at least 100 psi **air**. • Check that the **pump pressure compensator** setting is at **2500 psi**. • **Check** that the hydraulic **filter element** is not com-

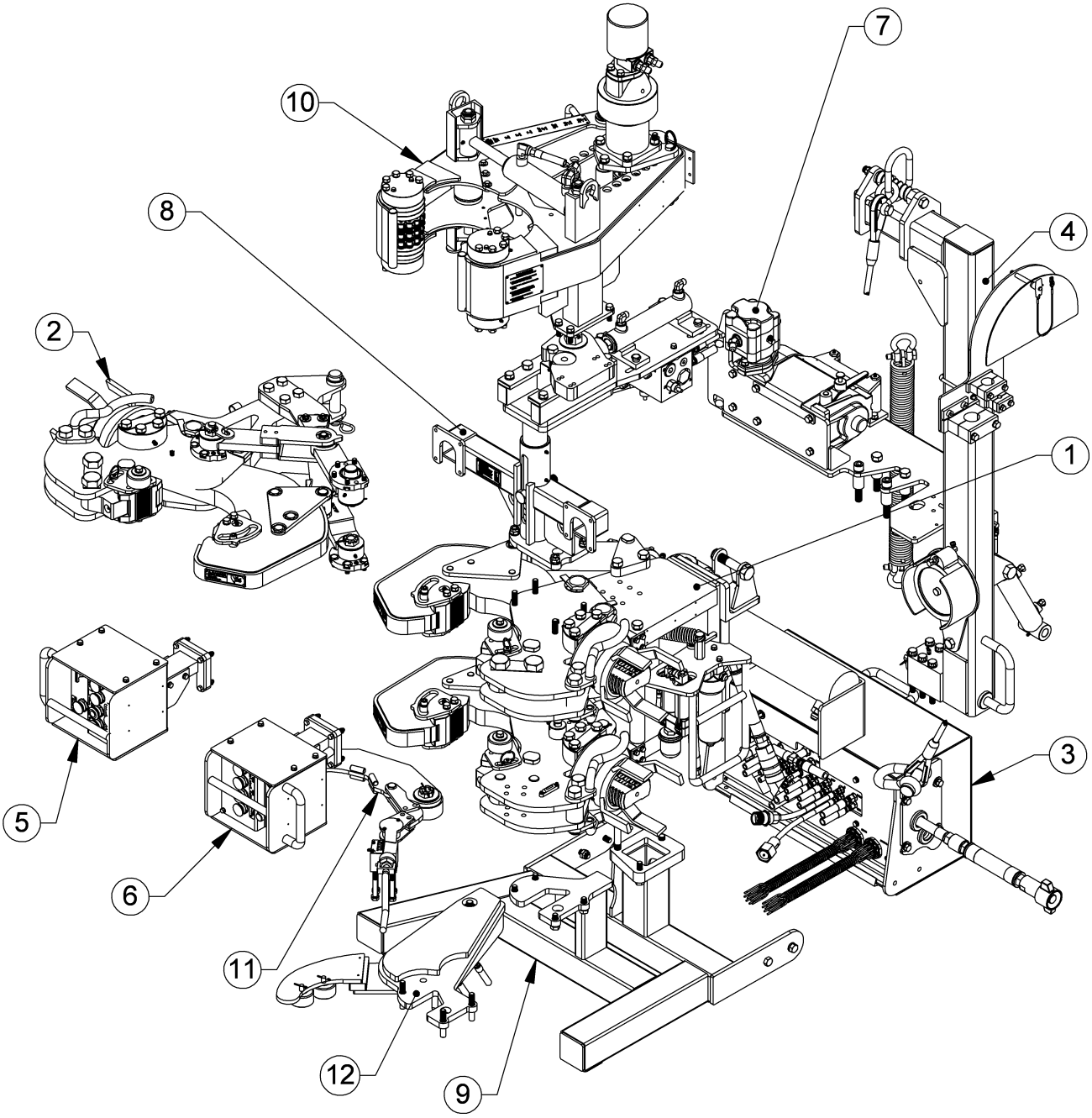
Problem	Remedy
	pletely full of contaminants. If the **red** indicator **button** on the hydraulic filter body pops **up**, **change** the **filter element**. See Filter Maintenance. ● **Check** that **no hissing** sound comes from the Winch On or Winch Off button. An **air hose** is **broken, switched** or **disconnected** if there is a **hissing sound**. **Locate** the **leak**, and **replace** the **hose** or **connect** the **hose** properly. See Drawings. ● **Check** that the Winch On and Winch Off **button air valves** work. **Disengage** the **winch.** See Installation. **Push** in the **button**. Air should **sound** like it is being **sharply inhaled**. **Release** the **button**. Air should **sound** like it is being **sharply exhaled**. If these sounds do not occur, **replace** the Winch On and/or Winch Off **button air valve**. See Drawings. ● **Check** the Winch sandwich valve **H6 flow setting**. No fluid will flow to the Winch if the flow setting is rotated clockwise to refusal. See Trouble Shooting, "**Winch moves at an undesired speed**".
The Tilt Cylinder moves at an undesired speed.	● Use a 7/32" allen wrench to **adjust** the Winch sandwich valve **H6 flow settings at each end**. See Drawings. **Rotate clockwise** to **reduce speed** and **counter-clockwise** to **increase speed** of the winch on and off the pipe. Use **Winch On** and **Winch Off to test**. Repeat process if necessary.
The Low torque warning system Test #1 has failed.	● The low torque warning poppet pin #061-30064 and #061-20238 poppet seat may have seal damage or the bellville springs #061-022S need replacement or correct placement. See Drawings. To check **poppet seal damage**, refer to page 24 for **LOW TORQUE WARNING TEST #1 PROCEDURES**.
The Low torque warning system Test #2 has failed.	● The low torque warning **small "U" cup seal is leaking**. **Replace the seal**. Make sure the **seal is installed with the top of the "U" facing in**. Order Hawk # 061-LTW-RK. See Drawings. Refer to **LOW TORQUE WARNING TEST #2 PROCEDURES**.

Trouble Shooting

Problem	Remedy
The Low torque warning system Test #1 has failed.	● The low torque warning poppet pin #061-30064 and #061-20238 poppet seat may have seal damage or the bellville springs #061-022S need replacement or correct placement. See Drawings. To check **poppet seal damage**, refer to page 23 for **LOW TORQUE WARNING TEST #1 PROCEDURES**.
The Low torque warning system Test #2 has failed.	● The low torque warning **small "U" cup seal is leaking**. **Replace the seal**. Make sure the **seal is installed with the top of the "U" facing in**. Order Hawk # 061-LTW-RK. See Drawings. Refer to **LOW TORQUE WARNING TEST #2 PROCEDURES**.

Notes

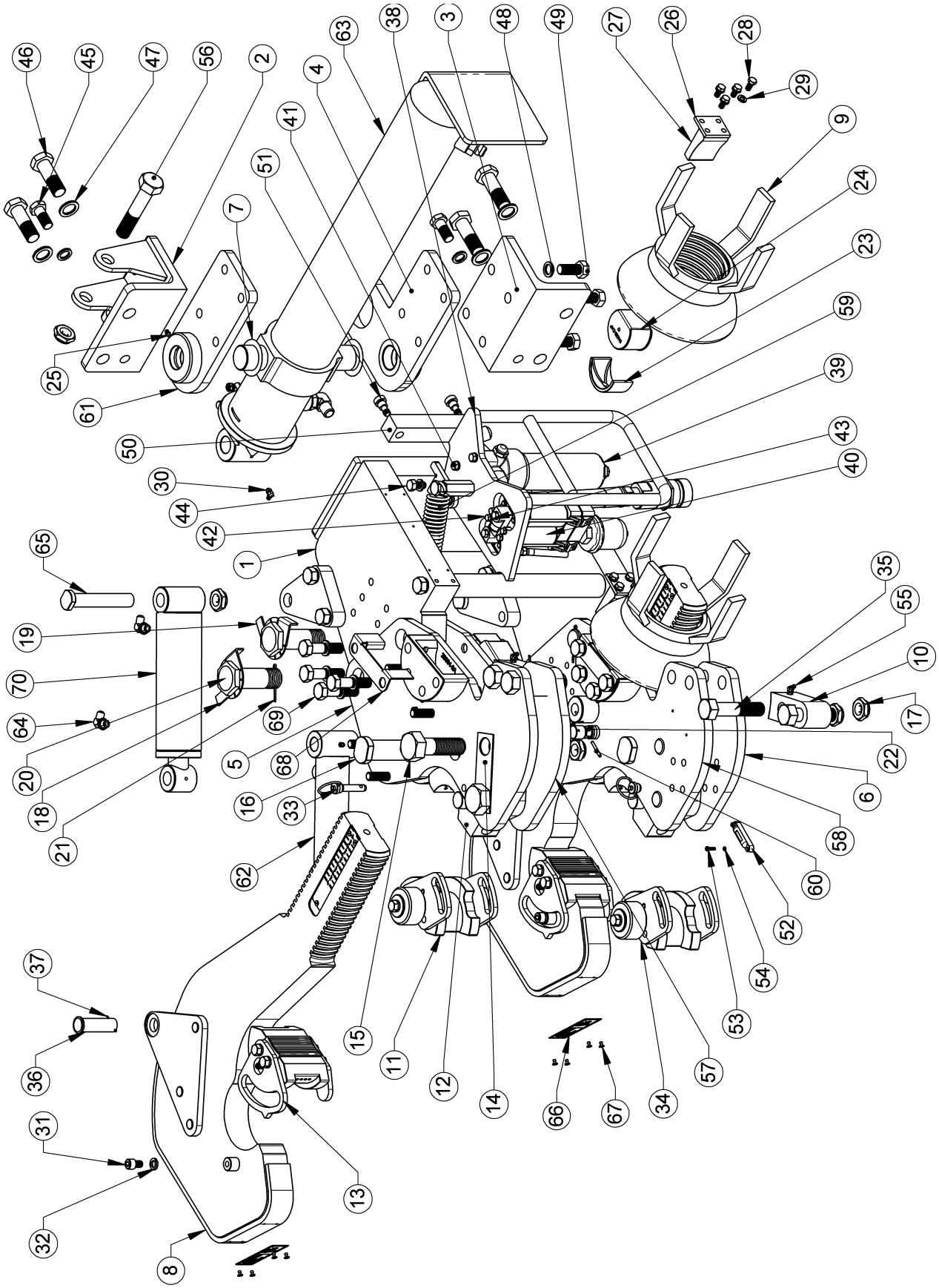
100K-2GSR Full Hawkjaw Assembly



100K-2GSR Full Hawkjaw Assembly

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	100K-2GSR-12 Top-Bottom Wrench Assembly	See Explosion
2	1	100K-2GSR-9 Middle Wrench Assembly	See Explosion
3	1	100K-2GSR-5 Hydro-Pheumatic Assembly	See Explosion
4	1	100K-2GSR-4 Hanger Assembly	See Explosion
5	1	100K-2GSR-6 Left Control Handle Assembly	See Explosion
6	1	100K-2GSR-7 Right Control Handle Assembly	See Explosion
7	1	100K-2GSR-13 Winch Mount Assembly	See Explosion
8	1	100K-2GSR-2 Spinner Mount Assembly	See Explosion
9	1	100K-2GSR-11 Stand Assembly	See Explosion
10	1	100K-2GSR-15 Hawkjaw Spinner Assembly	See Explosion
11	1	100K-2GSR-10 Pipe Stop assembly	See Explosion
12	1	100K-2GSR Hydraulic Pipe Clamp Sys Assy	See Explosion

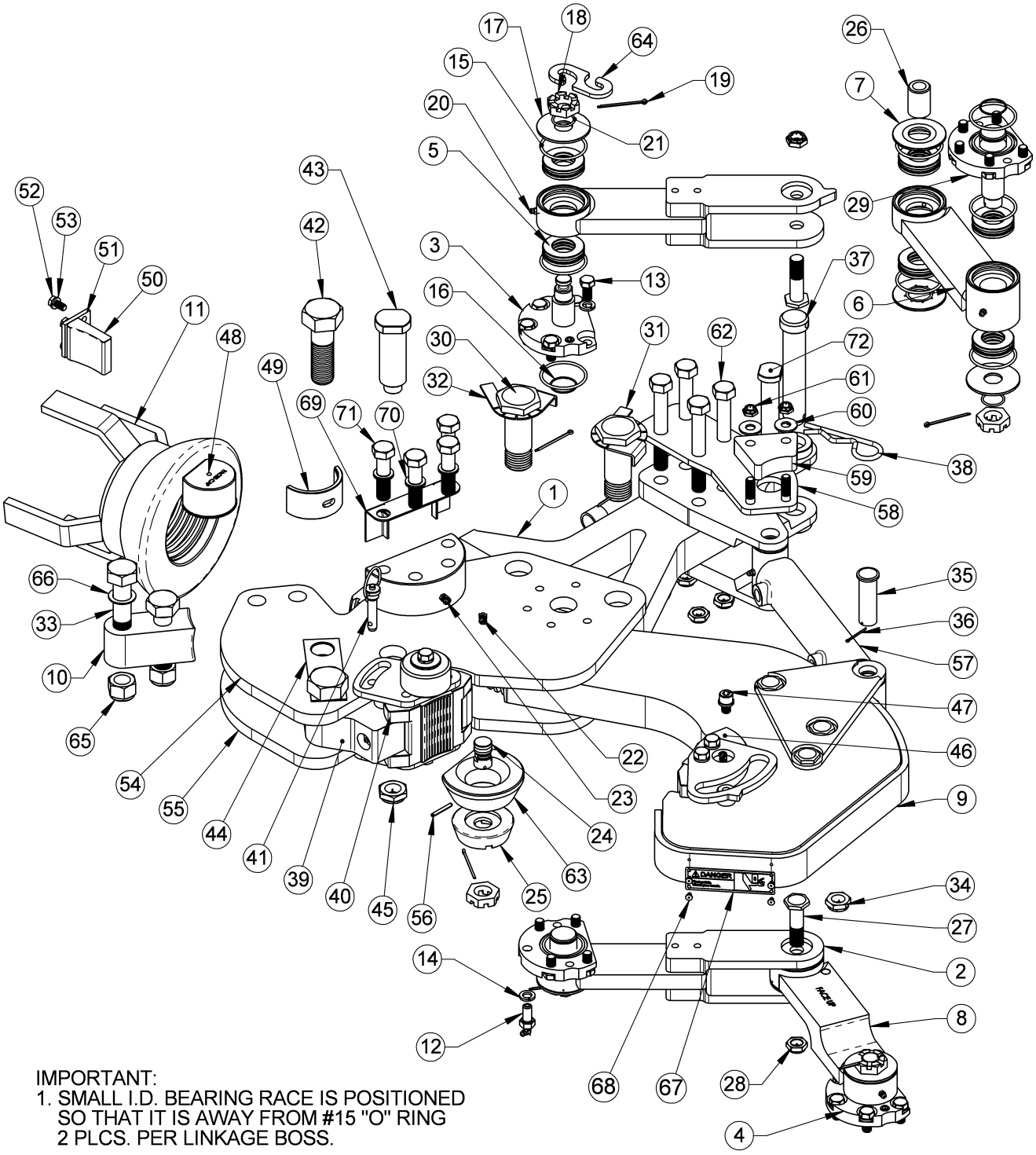
100K-2GSR Top-Bottom Wrench Assembly



100K-2GSR Top-Bottom Wrench Assembly

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	20145 Base Plate Assembly	
2	1	20084 Torque Cylinder Bracket, Upper Assembly	
3	1	20088 Torque Cylinder Bracket, Lower	
4	1	20080-2 Torque Cylinder Mount, Lower Assembly	
5	1	20004-3A Jaw Plate Assembly, Welded	
6	1	20004-1B Jaw Plate Assembly, Welded	
7	10	12042 Shim	
8	2	20002A Hook Assembly	
9	2	20188 Adjust Nut Assembly	
10	2	20072 Nut Bearing Plate	
11	1	20209-TOP Heel Die Holder Assembly, Top	See Explosion
12	2	20078 Stationary Jaw Cradle Assembly	
13	2	20211-TB Hook Die Holder Assembly, Middle	See Explosion
14	2	20269 Lock Plate	
15	4	806644_1 1.4-7 x 4.00 lg. Hex Bolt Grd. 9	
16	2	20217 Shoulder Bolt	
17	8	806594-500_1-14 Lock Nut	
18	2	20289-1A Lock Plate, Wrench Bolt	
19	2	20289-2A Lock Plate, Wrench Bolt	
20	4	20218 Bolt, Wrench	
21	4	807493-250 Cotter Pin	
22	1	20049A Stud, Pipe Stop Retrofit	
23	4	20234 Pivot Sleeve	
24	4	20198 Pivot Pin	
25	7	1103K1 Grease Fitting, Straight	
26	2	20202 Nut Stop Retainer	
27	2	20200 Nut Stop	
28	8	806004_3.8-16 x .75 Lg. Hex Bolt	
29	10	810645_3.8 Lock Washer	
30	8	1103K3 Grease Fitting, 90 Degree	
31	2	808413_1.2-13 x .75 lg. Soc. Hd. Cap Screw	
32	4	810703_1.2 Lock Washer	
33	2	92384A092 Push Button Pin	
34	1	20209-BOT Heel Die Holder Assembly, Bottom	See Explosion
35	4	806624_1-14 x 4.50 lg. Hex Bolt Grd. 9	
36	2	20270 Hook Pin	
37	2	98401A446_3.32 x 1.50 lg Cotter Pin	
38	1	20173A Filter Bracket Assembly	
39	1	H25 Hydraulic Filter Assembly	See Explosion
40	1	A22 On Board Air Filter Assembly	See Explosion
41	2	806011_3.8-16 x 1.0 Hex Bolt	
42	4	805847_1.4-20 x 1.00 lg. Hex Bolt	
43	4	810587_1.4 Lock Washer	
44	2	806246_1.2-13 x 1.00 Hex Bolt Grd. 9	
45	2	30117 Angle Braket Bolt, Small	
46	4	30118 Angle Bracket Bolt, Large	
47	4	91074A038 Lock Washer Assembly, 1.0	
48	22	91074A036 Lock Washer Assembly, 3.4	
49	4	806529_3.4-16 x 1.75 lg. Hex Bolt Grd. 9	
50	1	20258 Bumper, Torque Cylinder	
51	2	91259A118_5.8 x .50 lg. Shoulder Bolt	
52	1	20268 Level	
53	2	809403-1_10-32 x .625lg. Phils. Hd Screw SS	
54	2	809476_10 Lock Washer, High Collar	
55	2	1103K2 Grease Fitting, 45 Degree	
56	1	806627_1-14 x 5.00 lg. Hex Bolt Grd. 9	
57	1	20004A-3B Jaw Plate Assembly, Welded	
58	1	20004A-1A Jaw Plate Assembly, Welded	
59	1	620_Cent.1.75x14.0 x .207 Extention Spring	
60	1	807520_3.16 x 1.50lg. SS Roll Pin	
61	1	20121 Torque Cylinder Mount, Upper Assembly	
62	1	H18S Grip Tilt Cylinder Assembly	See Explosion
63	1	H17 Torque Cylinder Assembly	See Explosion
64	4	2062-6-6S_6MORB x 6MJIC Fitting 90	
65	2	806628-H Bolt, Grip Cylinder Middle Wrench	
66	2	SL5 Danger Label	
67	8	807801_ Pop Rivet	
68	4	20234-1 Pivot Sleeve Keeper	
69	16	806539_3.4-16 x 3.00 lg.Hex Bolt Grd. 9	
70	1	H18 Grip Tilt Cylinder Assembly	See Explosion

100K-2GSR Midde Wrench Assembly

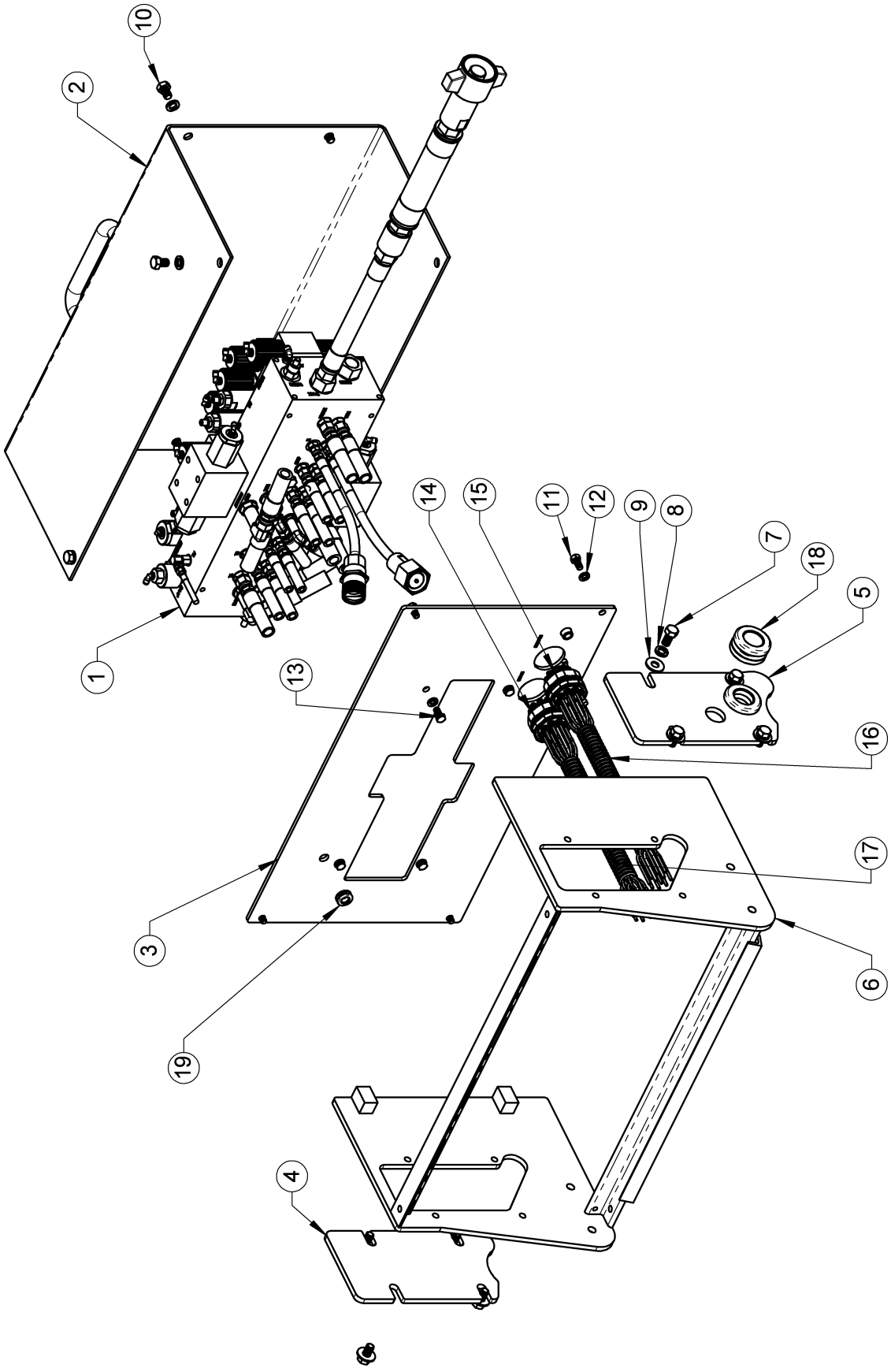


IMPORTANT:
1. SMALL I.D. BEARING RACE IS POSITIONED SO THAT IT IS AWAY FROM #15 "O" RING 2 PLCS. PER LINKAGE BOSS.

100K-2GSR Middle Wrench Assembly

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	20008 Base Plate, Moving Assembly, Welded	
2	2	20016A Linkage, Split Assembly	
3	1	20028-245 Pin, Linkage Mount Assembly	
4	2	20028-245B Pin, Linkage Mount Assembly	
5	12	146 Thrust Bearing Assembly	
6	1	20024 Linkage Assembly	
7	4	20029-138AM Washer Assembly	
8	1	20024-1 Stepped Linkage Arm Assembly	
9	1	20002A Hook Assembly	
10	1	20072 Nut Bearing Plate	
11	1	20188 Adjust Nut Assembly	
12	1	20274 Grease Bolt, Linkage Pin	
13	19	806369 1.2-20 x 1.00 lg. Hex Bolt Grd. 9	
14	21	810703_1.2 Lock Washer	
15	16	PRP568-229 O Ring	
16	4	PRP568-028 O Ring	
17	4	20029-1 Washer	
18	5	20229 Linkage Nut, Modified	
19	7	807493-250 Cotter Pin	
20	8	1103K1 Grease Fitting, Straight	
21	4	PRP568-122 O Ring	
22	2	1103K3 Grease Fitting, 90 Degree	
23	2	1103K2 Grease Fitting, 45 Degree	
24	1	20048A Stud, Cam Retro-fit	
25	1	20047A Stop Cam Roller	
26	2	20038 Pivot Bushing	
27	2	20214-2A Bolt, Modified	
28	6	806523_3.4-16 Flex Nut (31FK1216)	
29	1	20028-362 Pin, Linkage Mount Assembly	
30	2	20218 Bolt, Wrench	
31	1	20289-1A Lock Plate, Wrench Bolt	
32	1	20289-2A Lock Plate, Wrench Bolt	
33	3	806627_1-14 x 5.00 lg. Hex Bolt Grd. 9	
34	1	806551_7.8-9 Flex Nut (31FKF1409)	
35	1	20270 Hook Pin	
36	1	98401A446_3.32 x 1.50 lg Cotter Pin	
37	1	20204A Torque Cylinder Pin	
38	1	98335A114 Hair Pin Retainer	
39	1	20078 Stationary Jaw Cradle Assembly	
40	1	20209-MID_Heel Die Holder Assembly, Middle	See Explosion
41	1	92384A092 Push Button Pin	
42	2	806644_1 1.4-7 x 4.00 lg. Hex Bolt Grd. 9	
43	1	20217 Shoulder Bolt	
44	1	20269 Lock Plate	
45	1	806594-500_1-14 Lock Nut	
46	1	20211-MID_Hook Die Holder Assembly, Middle	See Explosion
47	1	808413_1.2-13 x .75 lg. Soc. Hd. Cap Screw	
48	2	20198 Pivot Pin	
49	2	20234 Pivot Sleeve	
50	1	20200 Nut Stop	
51	1	20202 Nut Stop Retainer	
52	4	806004_3.8-16 x .75 Lg. Hex Bolt	
53	4	810645_3.8 Lock Washer	
54	1	20004A-2A Jaw Plate Assembly, Welded	
55	1	20004A-2B Jaw Plate Assembly, Welded	
56	1	807520_3.16 x 1.50lg. SS Roll Pin	
57	1	H18S Grip Tilt Cylinder Assembly	See Explosion
58	1	20010-5 Reset Bumper Welded Assy	
59	1	20010-4 Bumper	
60	2	810705_1.2 Flat Washer	
61	2	806221_1.2-13 Flex Nut (21FKF813)	
62	4	806544_3.4-16 x 5.50 lg. Hex Bolt Grd. 9	
63	1	20047A-1 Spacer, Roller	
64	1	20023A Spring Mount Plate	
65	2	806590_1-14 Nylock Nut	
66	2	91074A038 Washer 1.0	
67	1	SL5 Danger Label	
68	4	807801_ Pop Rivet	
69	2	20234-1 Pivot Sleeve Keeper	
70	8	91074A036 Lock Washer Assembly, 3.4	
71	8	806539_3.4-16 x 3.00 lg.Hex Bolt Grd. 9	
72	1	806628-H Bolt, Grip Cylinder Middle Wrench	

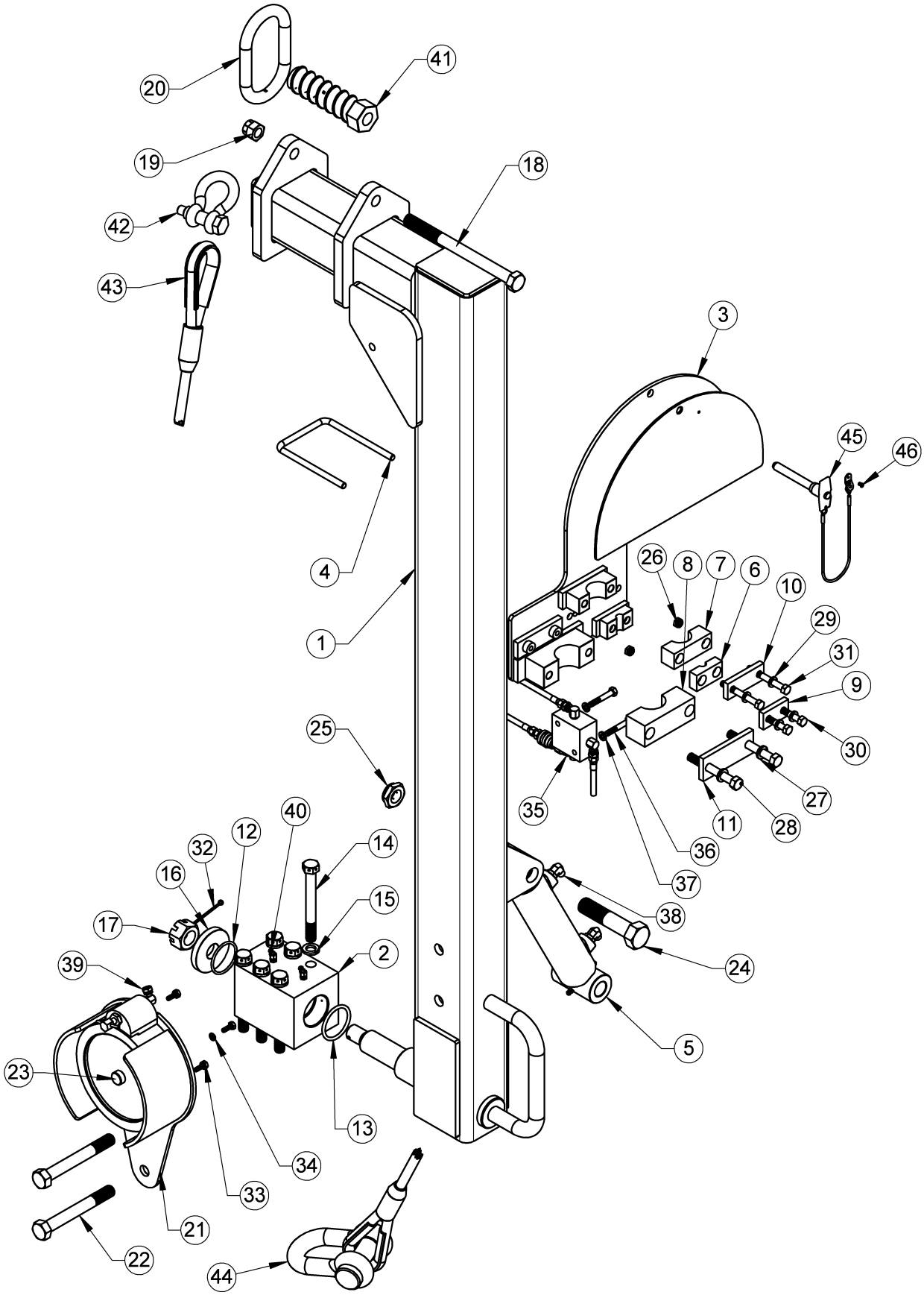
100K-2GSR Hydro-Pneumatic Assembly



100K-2GSR Hydro-Pneumatic Assembly

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	100K-2GSR Hydraulic Connections (J1A-A)	See Explosion
2	1	20169 Control Housing Assembly	
3	1	20176A Block Plate Assembly	
4	1	20167-2 Inspection Cover	
5	1	20167-3A Inspection Cover	
6	1	20162A Control Housing Assembly	
7	8	806244_1.2-13 x 1.0 Hex Bolt	
8	14	810703_1.2 Lock Washer	
9	8	810705_1.2 Flat Washer	
10	6	806239_1.2-13 x .75lg. Hex Bolt	
11	4	806003_3.8-16 x .75 lg. Hex Bolt	
12	8	810645_3.8 Lock Washer	
13	4	806004-1_3.8-16 x .75 Lg. Hex Bolt Drilled	
14	1	A11-1LCH Multiplex Connector Assembly	See Explosion
15	1	A11-2RCH Multiplex Connector Assembly	See Explosion
16	1	A11-RT_Right Control Tube Assembly	See Explosion
17	1	A11LFT Left Control Tube Assembly	See Explosion
18	2	20400 Grommet	
19	1	9307K62 Grommet	

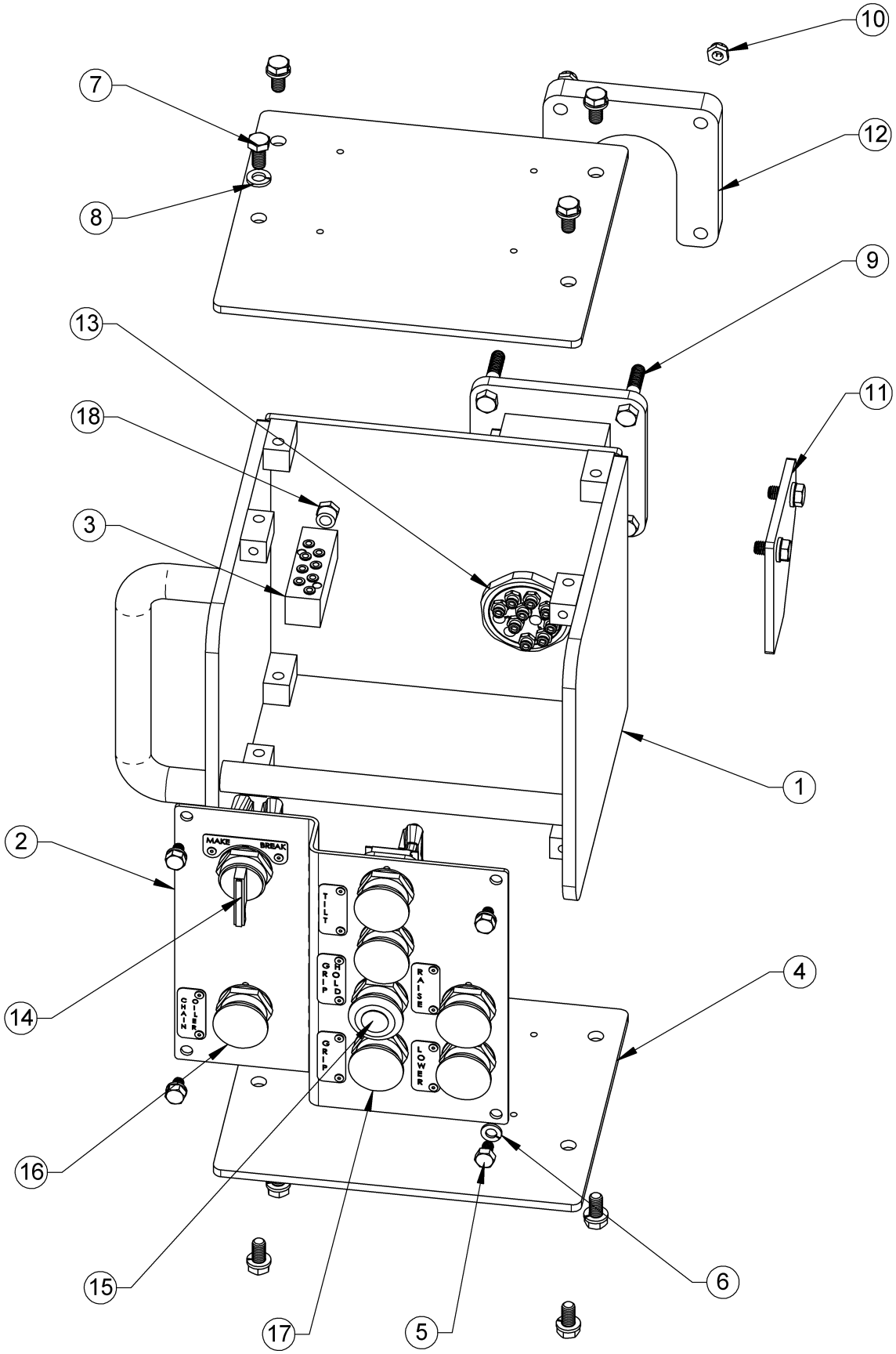
100K-2GSR HangerAssembly



100K-2GSR HangerAssembly

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	20147 Hanger Assembly	
2	1	20151 Spindle Block	
3	1	20267 Hose Mount, 2GSR Assembly	
4	1	20059 U Bolt for 2GSR	
5	1	H18S Grip Tilt Cylinder Assembly	See Explosion
6	2	SH30540PP 1.4 Hose Clamp (pipe)	
7	2	SH5150PP 1_1.2 Hoseclamp (tube)	
8	2	SH61900PP	
9	1	H30540-1 Bracket, Hose Clamp	
10	1	H5150-1 Bracket, Hose Clamp	
11	1	H61900-1	
12	1	PRP568-226 O Ring	
13	1	PRP-568-329 O-Ring	
14	6	806446_5.8-11 x 5.50lg. Hex Bolt	
15	6	810732_5.8 Lock Washer	
16	1	20029-2 Washer,Spindle Block	
17	1	806581-1 Castle Nut	
18	1	806510_3.4-10 x 9.50 Hex Bolt	
19	3	806503_3.4-10 Flex Nut (31FAF1210)	
20	1	13143 Suspension Ring	
21	1	20180 Gage Housing Assembly	
22	2	806504_3.4-10x6.00lg Hex Bolt, Grd 9	
23	1	H178 Torque Gauge	
24	1	806624_1-14 x 4.50 lg. Hex Bolt Grd. 9	
25	1	806594-500_1-14 Lock Nut	
26	2	805987-750 3.8-16 Flex Nut (21FKF616)	
27	2	810703_1.2 Lock Washer	
28	2	806310_1.2-13 x 4.00 Hex Bolt	
29	4	810645_3.8 Lock Washer	
30	2	806042_3.8-16 x 2.00lg. Hex Bolt	
31	2	806049_3.8-16 x 3.25lg. Hex Bolt	
32	1	807493-250 Cotter Pin	
33	3	805842_1.4-20 x .75 lg. Hex Bolt	
34	3	810587_1.4 Lock Washer	
35	1	100K-2GSR Gage Manifold Assembly	See Explosion
36	2	805922_5.16-18 x 2.0 Hex Bolt	
37	2	810616_5.16 Lock Washer	
38	2	2062-6-4S_6MORB x 4MJIC Fitting 90	
39	1	2047-2-2S 2MNPTX2FNPT Fitting 90 Drg Swivel	
40	2	1103K2 Grease Fitting, 45 Degree	
41	1	13179-2 Adjust Screw	
42	1	G2130-5.8 Shackle	
43	1	SC74 Safety Cable	
44	1	G215-1_1.8 Shackle	
45	1	93750A715 Push-Button Pin w Cable	
46	1	807800_ Pop Rivet	

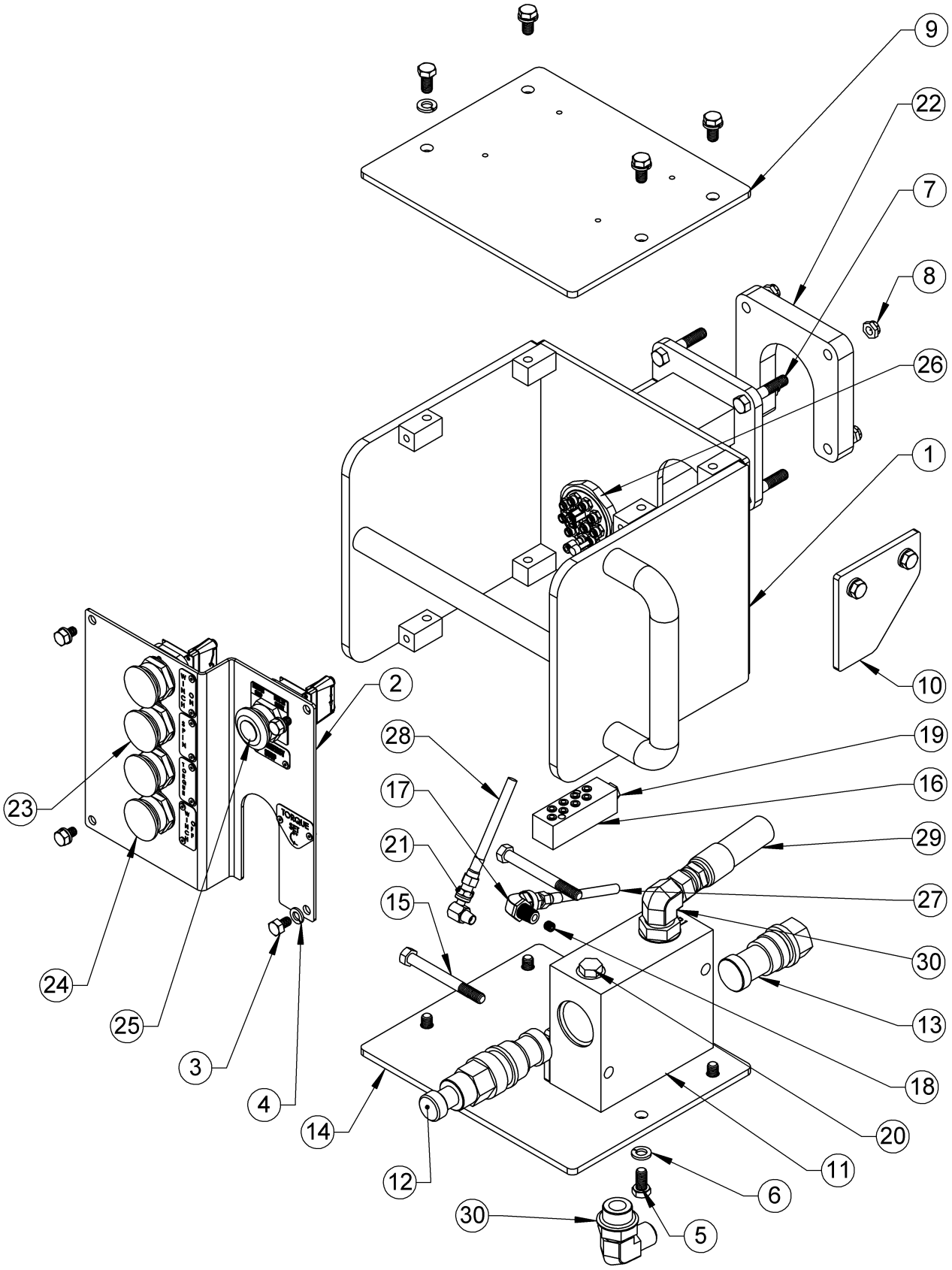
100K-2GSR Left Control Handle Assembly



100K-2GSR Left Control Handle Assembly

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	70100 Left Control Handle Assembly	
2	1	70103 Left Control Panel Assembly	
3	1	A15 Air Manifold	
4	2	20104-1 Control Handle, Top & Bottom Cover	
5	4	805916_5.16-18 x .50 LG. HEX BOLT	
6	4	810616_5.16 Lock Washer	
7	12	806004_3.8-16 x .75 Lg. Hex Bolt	
8	12	810645_3.8 Lock Washer	
9	4	806041_3.8-16 x 2.00 lg. Hex Bolt Grd. 5	
10	4	805987-750 3.8-16 Flex Nut (21FKF616)	
11	2	20247 Guard, Air Connector	
12	1	20117A Rubber Shock Mount	
13	1	A11-LCH Multiplex Connector Assembly	See Explosion
14	1	A1 Selector Switch Assembly	
15	1	A8GH Grip Hold Button Assy	
16	5	A3 Button Air Valve Assembly	
17	1	A4G Grip Valve Assembly	
18	1	2081-4-2S 1.4 x 1.8 H.P. Hex Bushing	

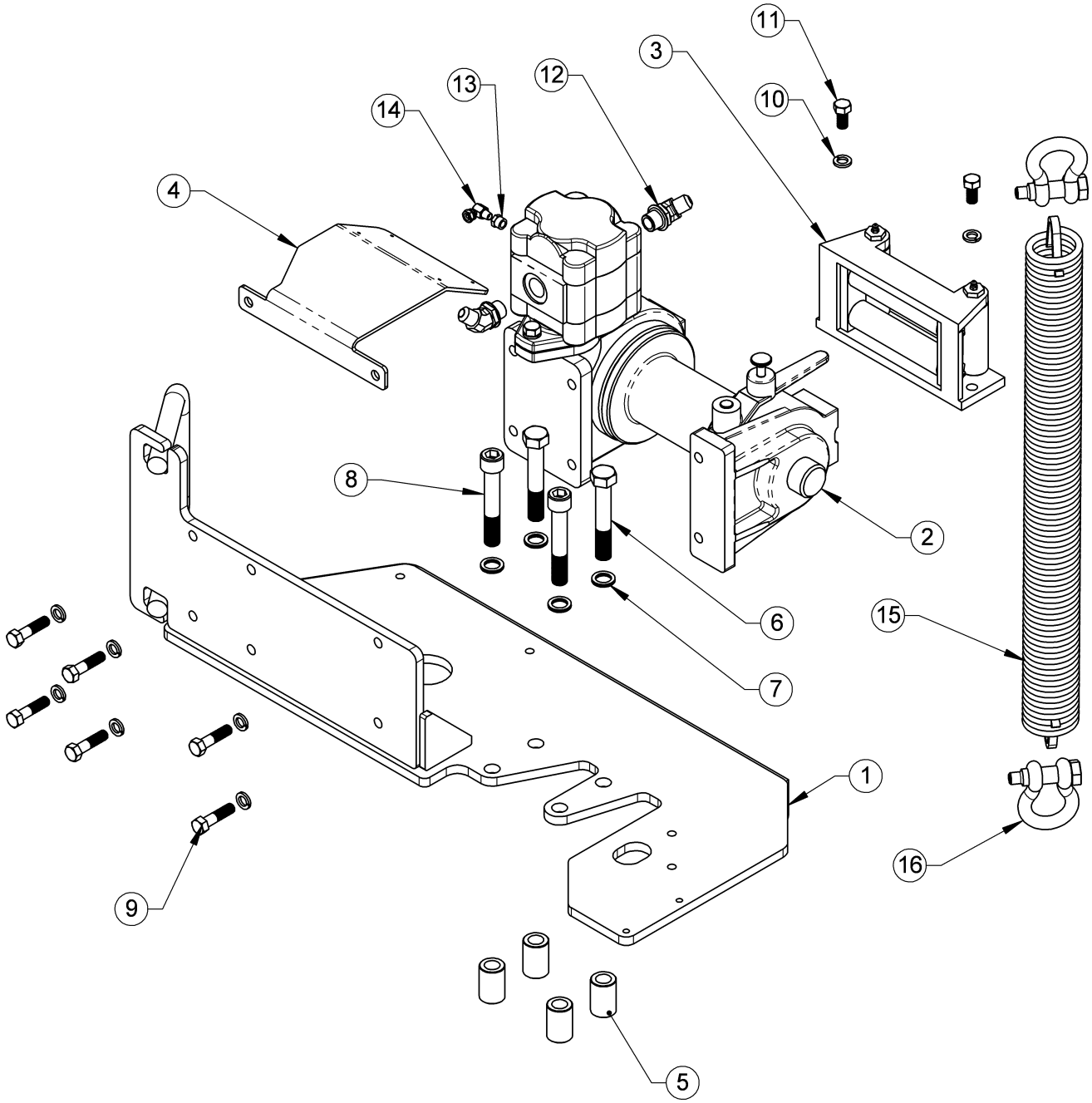
100K-2GSR Right Control Handle Assembly



100K-2GSR Right Control Handle Assembly

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	70101 Right Control Handle Assembly	
2	1	70105 Right Control Panel Assembly	
3	4	805916_5.16-18 x .50 LG. HEX BOLT	
4	4	810616_5.16 Lock Washer	
5	12	806004_3.8-16 x .75 Lg. Hex Bolt	
6	12	810645_3.8 Lock Washer	
7	4	806041_3.8-16 x 2.00 lg. Hex Bolt Grd. 5	
8	6	805987-750 3.8-16 Flex Nut (21FKF616)	
9	1	20104-1 Control Handle, Top & Bottom Cover	
10	2	20247 Guard, Air Connector	
11	1	20222 Torque Control Block, Modification	
12	1	J55A Torque Control Valve Assembly	
13	1	CXGD-XBN Check Valve	
14	1	20104-2 Control Handle, Right Bott. Assembly	
15	2	806051_3.8-16 x 3.50lg. Hex Bolt	
16	1	A15 Air Manifold	
17	1	30113 Orifice Fitting	
18	1	2087-019 Orifice Plug	
19	2	2081-4-2S 1.4 x 1.8 H.P. Hex Bushing	
20	1	900598-6S_MORB Plug	
21	1	2047-2-2S 2MNPTX2FNPT Fitting 90 Drg Swivel	
22	1	20117A Rubber Shock Mount	
23	2	A20 Button Air Valve Assembly	
24	2	A3 Button Air Valve Assembly	
25	1	A80 'E' Stop Button Assy	
26	1	A11-RCH Multiplex Connector Assembly	See Explosion
27	1	HOS-18_1.8MNPTx1.8MNPTx54lg_1.8 Hose	
28	1	HOS-18A_1.8MNPTx1.8MNPTx50lg_1.8 Hose	
29	1	HOS-6B_-10FJICx-10FJICx92.00lg. Hose	
30	2	2062-12-10S_12MORB x 10MJIC Fitting 90	

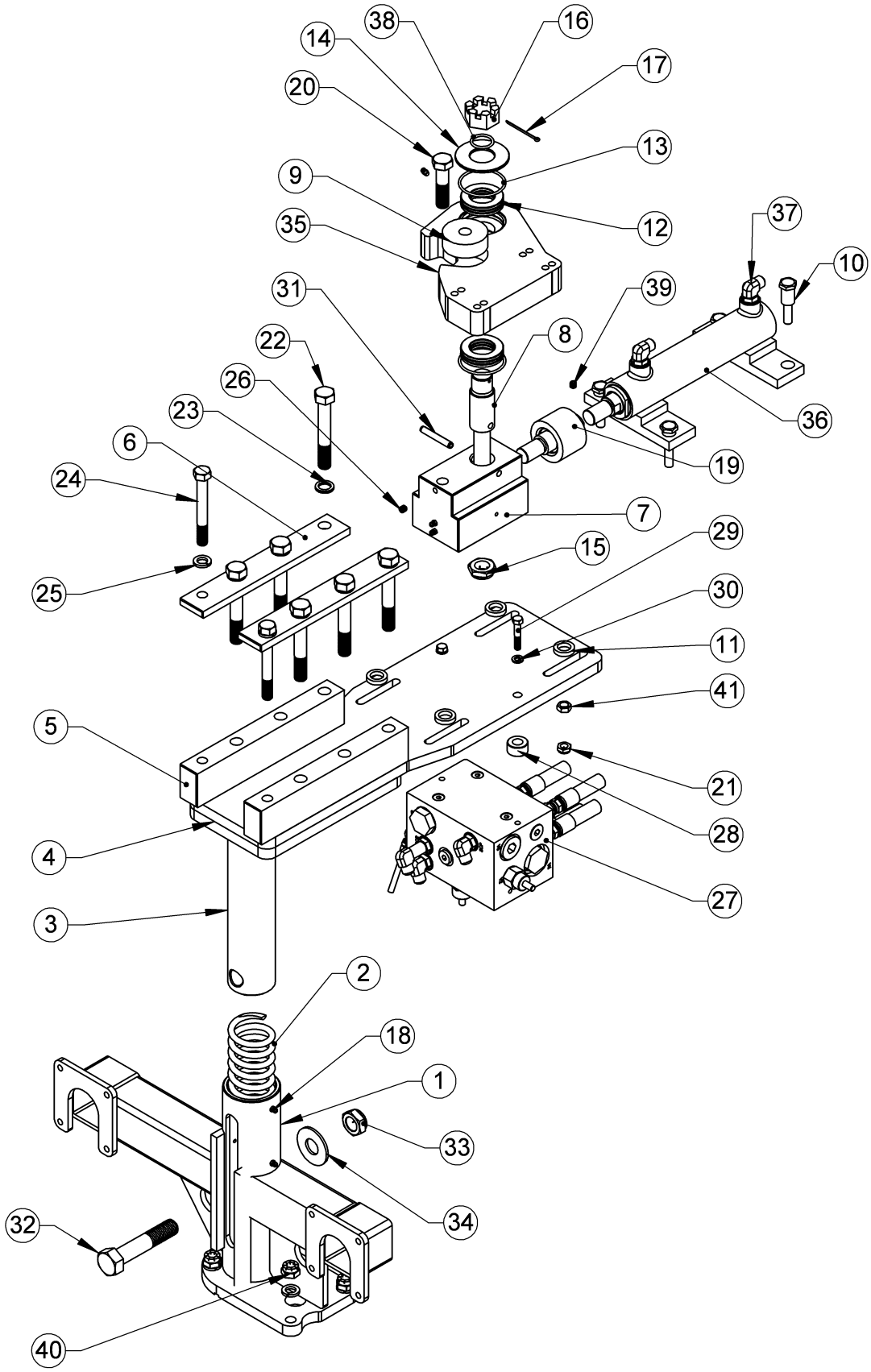
100K-2GSR Winch MountAssembly



100K-2GSR Winch MountAssembly

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	20223 Winch Mount Assembly	
2	1	H59 Winch Assembly, Manual	
3	1	59R Roller Assembly, Winch	
4	1	20286 Winch Cover	
5	4	20203 Spacer, Winch	
6	2	806542-1_3.4-16 x 4.50 Hex Bolt	
7	4	91074A036 Lock Washer Assembly, 3.4	
8	2	806542_3.4-16 X 4.50lg. Soc. Hd. Cap Screw	
9	6	806284_1.2-13 x 2.00lg. Hex Bolt	
10	8	810703_1.2 Lock Washer	
11	2	806244_1.2-13 x 1.0 Hex Bolt	
12	2	2061-10-8S_10MORB x 8MJIC Fitting 45	
13	1	2081-4-2S 1.4 x 1.8 H.P. Hex Bushing	
14	1	2047-2-2S 2MNPTX2FNPT Fitting 90 Drg Swivel	
15	1	C028 Winch Cable Spring	
16	2	G2130-5.8 Shackle	

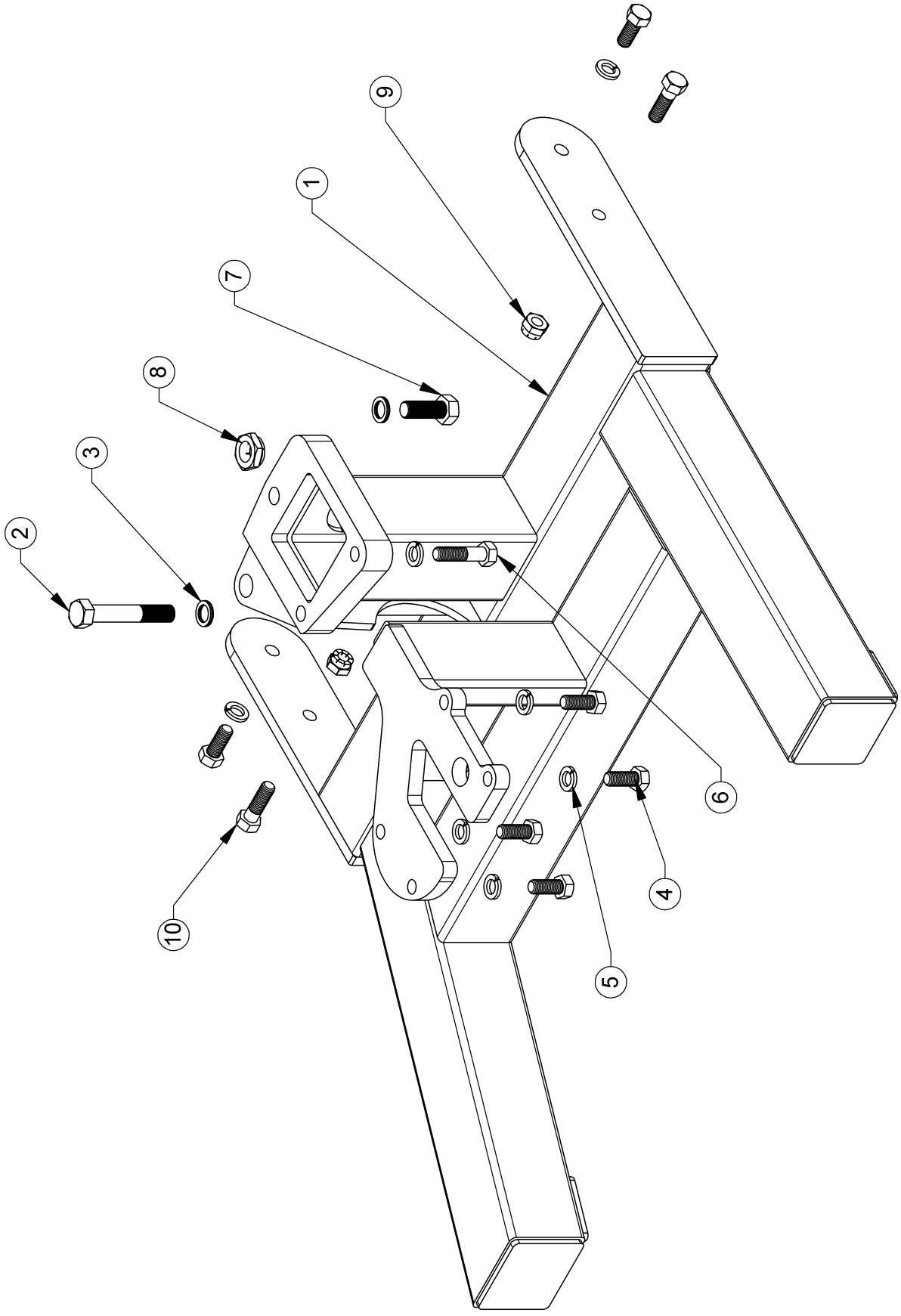
100K-2GSR Spinner MountAssembly



100K-2GSR Spinner MountAssembly

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	20094A Spinner Mount Assembly	
2	1	HA-032596A Spring	
3	1	20118 Slide Tube Assembly	
4	1	20126 Slide Base	
5	2	20127 Side Slide	
6	2	20131 Slide Cap	
7	1	20129 Slide Block	
8	1	20134 Pivot Pin	
9	1	20125 Return Bumper	
10	4	20133 Cylinder Bolt	
11	4	20135 Cylinder Mount, Rubber	
12	2	4 Thrust Bearing Assembly	
13	2	PRP568-231 O Ring	
14	1	9108A041 Washer	
15	1	806594-500_1-14 Lock Nut	
16	1	806642_1.25-12 Castle Nut	
17	1	807493-250 Cotter Pin	
18	7	1103K1 Grease Fitting, Straight	
19	1	M030 Alignment Coupler	
20	1	806539_3.4-16 x 3.00 lg.Hex Bolt Grd. 9	
21	4	806358-300_1.2-20 Flex Nut (21FK820)	
22	6	806543_3.4-16 x 5.00lg. Hex Bolt Grd.9	
23	6	91074A036 Lock Washer Assembly, 3.4	
24	2	806445_5.8-11 x 5.00lg. Hex Bolt Grd. 9	
25	6	810732_5.8 Lock Washer	
26	1	806088_3.8-24 x .375lg. Set Screw, Cup Point	
27	1	100K-2GSR-1 Spin Manifold Assembly	See Explosion
28	2	20012 Boss, Mount	
29	2	806042_3.8-16 x 2.00lg. Hex Bolt	
30	2	810645_3.8 Lock Washer	
31	1	807511_3.8 Dia. x 2.50lg. HCS Spirol Pin	
32	1	806585_1-8 x 5.00lg. Hex Bolt Grd.9	
33	1	806580_1.0-8 Lock Nut	
34	1	810821_1.00 Flat Washer	
35	1	20138C Pivot Mount	
36	1	H37S-2 Push Cylinder AsseMbly	See Explosion
37	2	2062-8-8S_8MORB x 8MJIC Fitting 90	
38	1	PRP568-217 O Ring	
39	1	808372_3.8-16 x .375 Lg. Soc. Hd. Set Screw, Cup Point	
40	4	806414-500_5.8-11 Flex Nut (31FA1011)	
41	4	806353_1.2-20 Hex Jam nut	

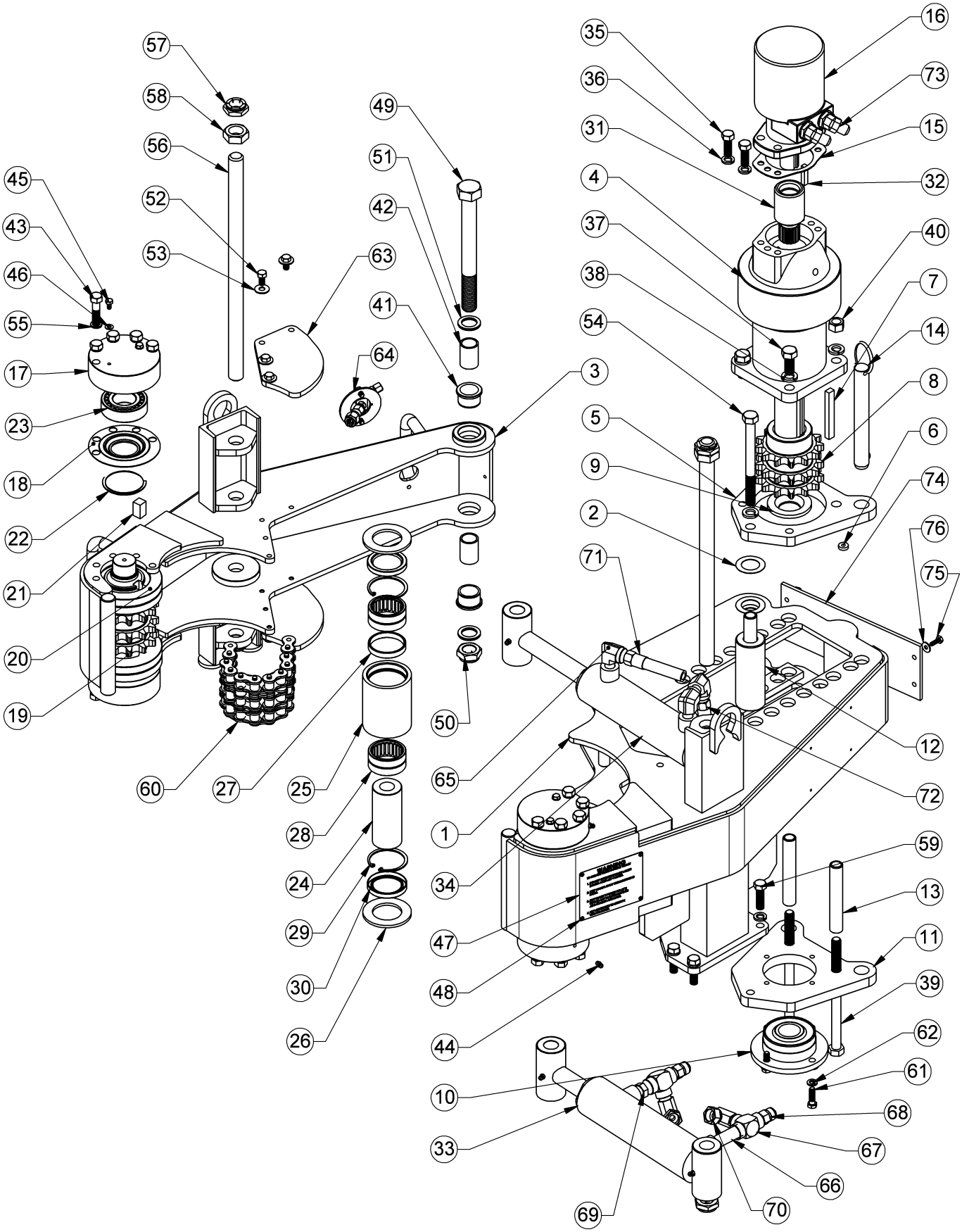
100K-2GSR Stand Assembly



100K-2GSR Stand Assembly

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	20075A Stand Assembly	
2	1	806542-1_3.4-16 x 4.50 Hex Bolt	
3	2	91074A036 Lock Washer Assembly, 3.4	
4	6	806436_5.8-11 x 1.50 lg. Hex Bolt Grd. 9	
5	7	810732_5.8 Lock Washer	
6	1	806439_5.8-11 x 2.50 lg Hex Bolt Grd. 9	
7	1	806538_3.4-16 x 2.00 lg. Hex Bolt Grd. 9	
8	1	806594-500_1-14 Lock Nut	
9	2	806414-500_5.8-11 Flex Nut (31FA1011)	
10	2	806438_5.8-11 x 2.00 lg Hex Bolt Grd. 9	

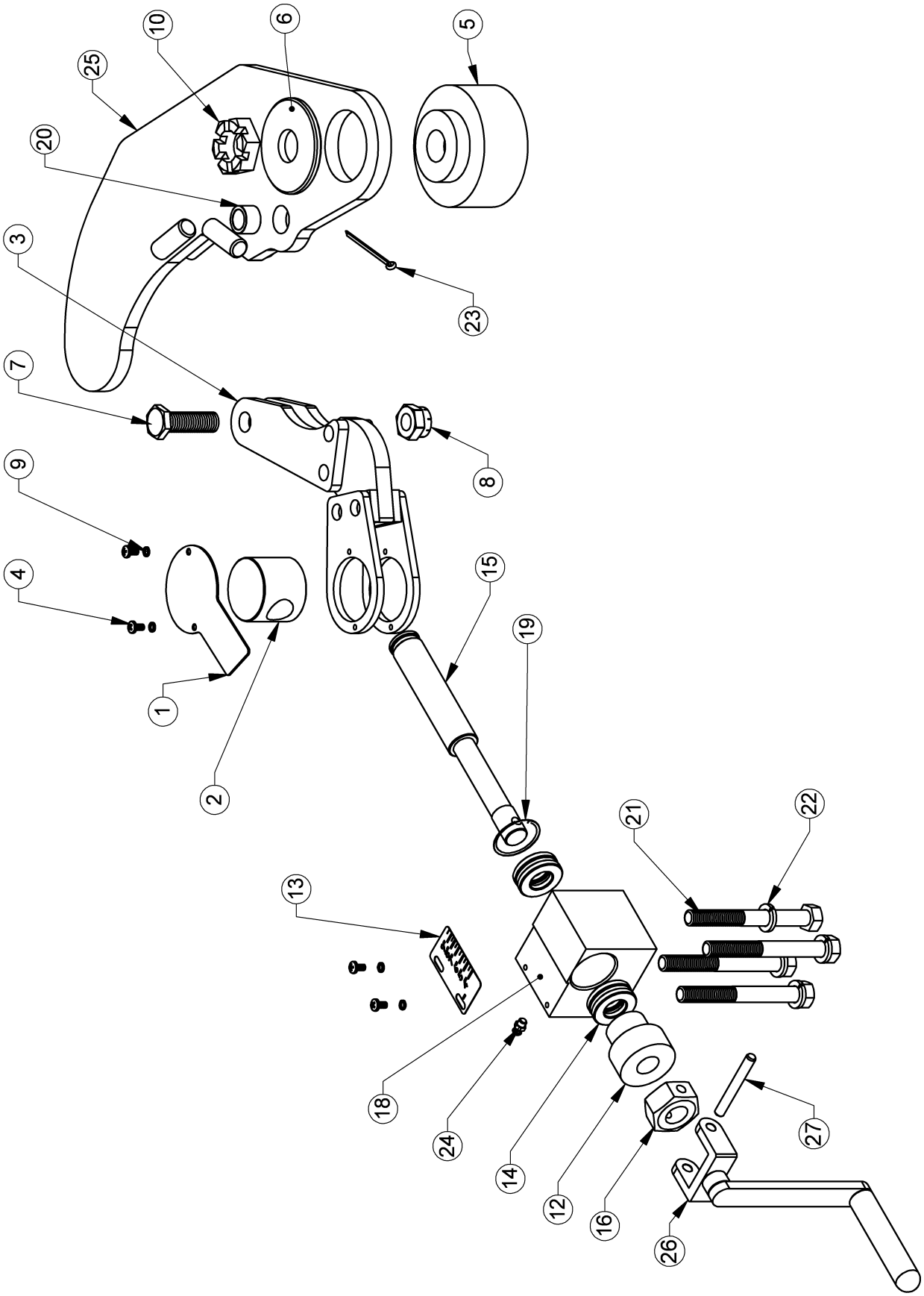
100K-2GSR Hawkjaw Spinner Assembly



100K-2GSR Hawkjaw Spinner Assembly

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	25710-SR Case Assembly, Stationary	
2	4	95601A435 Fiber Washer	
3	1	25703-SR Case Assembly, Moving Arm	
4	1	24625 Reducer Assembly	See Explosion
5	1	24701 Mounting Plate, Gear Box	
6	4	24646 Wear Block	
7	1	24642 Key, Drive Sprocket	
8	1	24641 Drive Sprocket	
9	1	24635 Spacer, Drive Sprocket	
10	1	24656 Drive Shaft Bearing, Modified	
11	1	24702 Mounting Plate, Bearing	
12	1	24658 Chain Guard	
13	3	24722 Spacer, Gear Box	
14	2	98404A878 Quick Release Pin Assembly	
15	1	M22 Motor Mount Gasket	
16	1	ME09 Hydraulic Motor	
17	4	24622 Bearing Cap	
18	4	24654 Bearing Seal Assembly	
19	2	24623 Roller Sprocket	
20	4	24649 Roller	
21	4	24643 Key, Roller	
22	4	RST-275-S Retainer Ring	
23	4	24731 Sphere-Rol Bearing	
24	2	25723 Idler Bushing	
25	2	25721 Idler Roller	
26	4	25722 Spacer	
27	2	25724 Bearing Spacer	
28	4	25721-B Bearing Assembly, Idler Roller	
29	4	25721-RR Retainer Ring, Idler Roller	
30	4	25721-S Seal, Idler Roller	
31	1	R25 Sun Gear Kit	
32	1	M21 Key	
33	1	25CYL25-BS Grip Cylinder, Bottom	See Explosion
34	1	25CYL25-AS Grip Cylinder, Top	See Explosion
35	4	806267_1.2-13 x 1.50lg. Hex Bolt	
36	8	810703_1.2 Lock Washer	
37	2	806435_5.8-11 x 1.50 lg. Hex Bolt	
38	5	810732_5.8 Lock Washer	
39	2	806452_5.8-11 x 9.00 lg. Hex Bolt	
40	2	806416_5.8-11 Hex Nut	
41	2	24729 Flanged Bearing	
42	2	24637 Bushing	
43	20	806373_1.2-20 x 2.00 lg.Hex Bolt Grd. 9	
44	5	1103K1 Grease Fitting, Straight	
45	8	805834_1.4-20 x .50 lg. Hex Bolt	
46	8	811150_#14 Brass Washer	
47	2	13002 Warning Tag	
48	8	807800_ Pop Rivet	
49	1	91257A983_1.0-8 x 9.50 lg. Hex Bolt	
50	1	806580_1.0-8 Lock Nut	
51	2	91074A038 Lock Washer Assembly, 1.0	
52	8	806003_3.8-16 x .75 lg. Hex Bolt	
53	8	810648_3.8 Flat Washer	
54	1	806450-1_5.8-11 x 7.00 lg. Hex Bolt Grd. 9	
55	20	91074A033 Lock Washer Assembly, 1.2	
56	2	25725 Pin	
57	4	806594-500_1-14 Lock Nut	
58	2	806586_1.0-14 Hex Jam Nut	
59	4	806276_1.2-13 x 1.75 Hex Bolt	
60	1	25CHAIN SpinMaster Chain Assembly	
61	4	806016_3.8-16 x 1.25 lg Hex Bolt	
62	4	810645_3.8 Lock Washer	
63	2	25720 Safety Cover	
64	1	25726 Chain Oiler Assy	See Explosion
65	3	2089-8-8S_8MNPT x 8FNPT Fitting 90 Elbow	
66	1	2084-8S-3 lg. Nipple, Hydraulic Plated	
67	2	2090-8-8S_1.2 FNPT Elbow, Hyraulic	
68	2	2021-8-8S_8MNPT x 8FJIC Hydraulic Adaptor	
69	1	2083-8S-8Sx1.89 lg. Hex Nipple, Hydraulic	
70	2	2047-8-8S_1.2 MNPT x 1.2 FNPT Fitting 90 Swivel	
71	1	24738-8_1.2 MNPT x 1.2 MNPTx 31.0lg.-8Hyd. Hose	
72	1	24738-13_1.2 MNPT x 1.2 MNPTx 26.0lg.-8Hyd. Hose	
73	2	2061-10-8S_10MORB x 8MJIC Fitting 45	
74	1	24723 Rubber Cover	
75	4	805842_1.4-20 x .75 lg. Hex Bolt	
76	4	810589_1.4 Flat Washer	

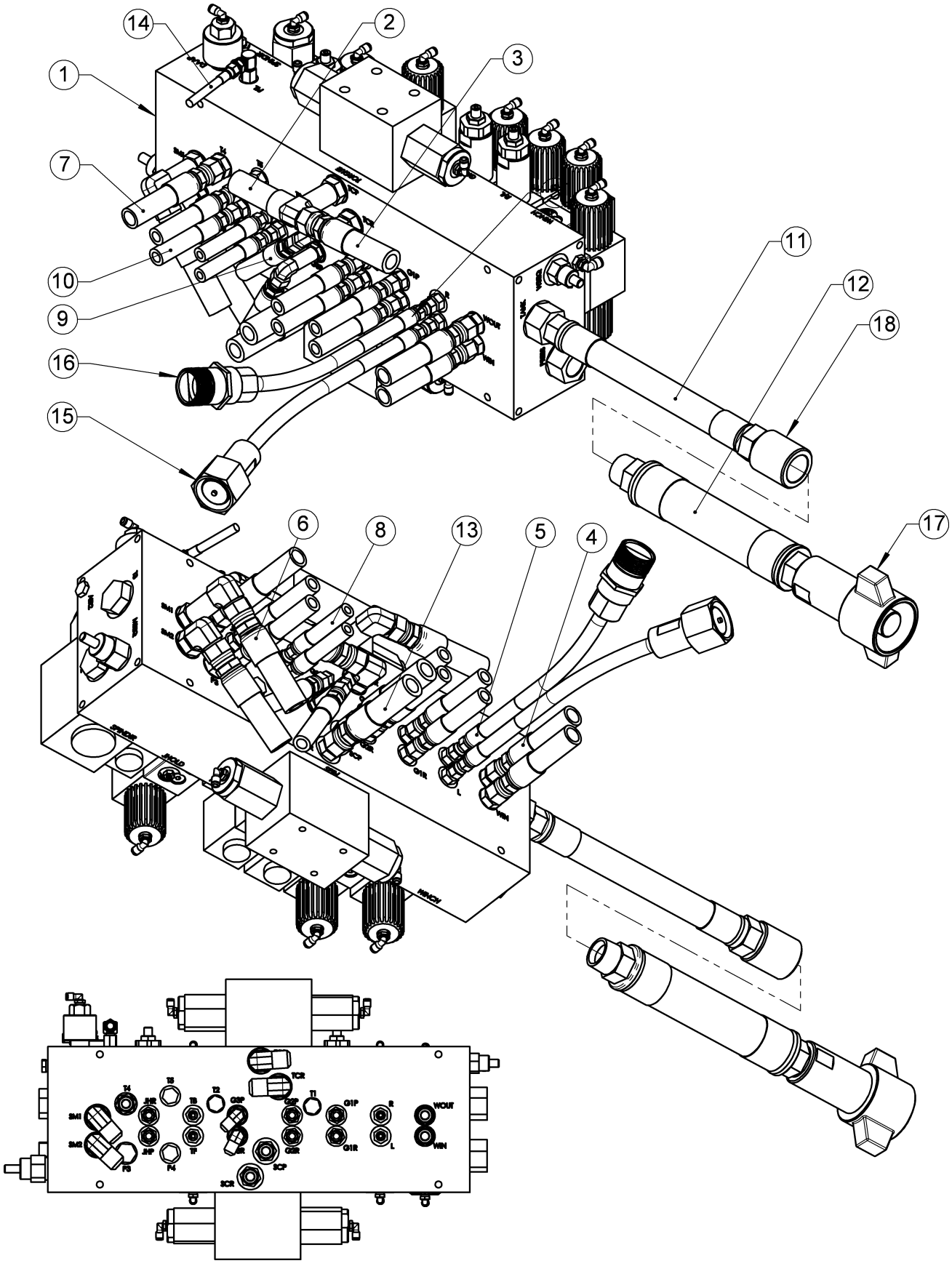
100K-2GSR Pipe Stop Assembly



100K-2GSR Pipe Stop Assembly

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	20066 Pointer	
2	1	20060 Adjust Clevis	
3	1	20050 Linkage, Stop Assembly	
4	4	809403_10-32x.375 Screw SS	
5	1	20041A Pipe Stop Rubber	
6	1	20029-250 Washer, Pipe Stop	
7	1	20214-3 Hex Bolt	
8	1	806414-500_5.8-11 Flex Nut (31FA1011)	
9	4	809476_10 Lock Washer, High Collar	
10	1	20229 Linkage Nut, Modified	
12	1	20061A Shock Sleeve	
13	1	20069 Index, Pipe Stop	
14	2	106 Ball Thrust Bearing Aseembly	
15	1	20062A Adjust Screw	
16	1	20070 Adjust Nut	
18	1	20068 Adjust Base	
19	1	RR-150-S Retainer Ring	
20	1	20067 Bearing	
21	4	806311_1.2-13 x 4.5 Hex Bolt	
22	4	810703_1.2 Lock Washer	
23	1	807493-250 Cotter Pin	
24	1	1103K1 Grease Fitting, Straight	
25	1	20044A Pipe Stop Assembly	
26	1	20045-1 Crank, Pipe Stop	
27	1	98380A591 5.16 X 2.50 LGg Dowel Pin	

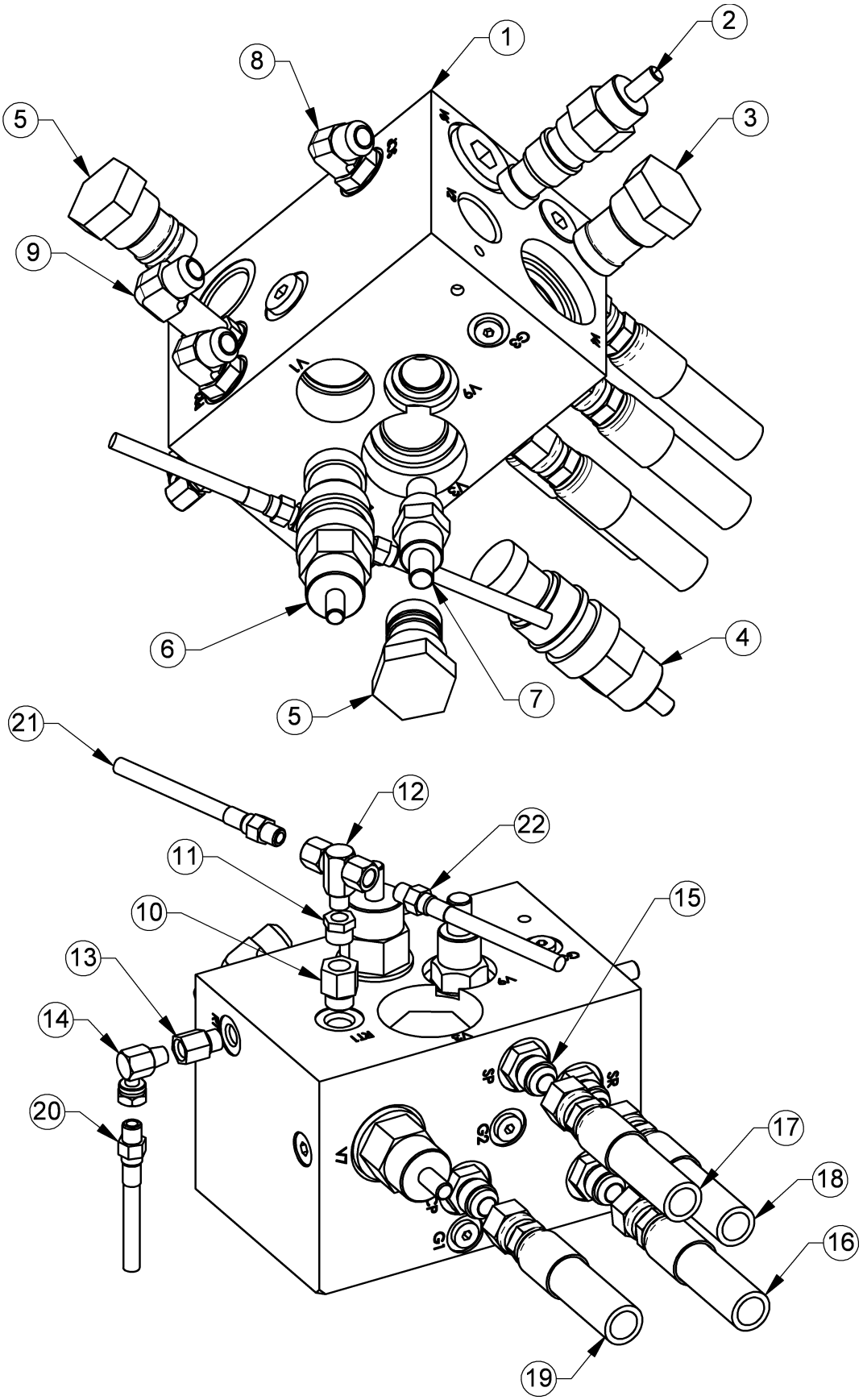
100K-2GSR Hydraulic Connections



100K-2GSR Hydraulic Connections

ITEM	QTY.	PART NO./DESC	PORT/DESC.	HOSE DESTINATION
1	1	100K-2GSR Main Manifold Assembly (J1A-A)		
2	1	HOS-12_-10FJICx-10FJICx35.00lg. Hose	TCR	Torque Cyl. Rod
3	1	HOS-132G_-10FJICx-10FJICx 110.0lg-10. Hose	TCP	PR2-Torque Cntrl. Manifold
4	2	HOS-82G_-8FJICx-8FJICx100.00lg. Hose	WIN, WOUT	Winch Motor
5	2	HOS-42G_1.4MNPTx-4FJICx117.00lg. Hose	R, L	Raise/Lower Cyl. Rod, Pist.
6	2	HOS-102G_-10FJICx-10FJICx115.00lg. Hose	SM1, SM2	Spinner Motor
7	1	HOS-72G_-8FJICx-8FJICx92.00lg-8. Hose	T4	PR3-Spin Manifold
8	2	HOS-52G_-4FJICx-4FJICx86.00lg-4. Hose	TB, TF	Tilt Cyl. Piston, Rod
9	2	HOS-142G_-6FJICx-6FJICx95.00lg-6. Hose	G3R, G3P	Top Grip Rod, Piston
10	6	HOS-62G_-6FJICx-6FJICx36.00lg. Hose	G1R, G1P, G2R, G2P, JHR, JHP	Bott. Grip Rod, Pist.; Midd. Grip Rod, Pist.; Jaw Holder Rod, Pist.
11	1	HOS-122G_3.4MNPTx-1 MNPTx30.00lg_-12 Hose	TANK	Tank Line (HOS-24)
12	1	HOS-24_1 MNPTx1 MNPTx180.00lg_-20 Hose	HOS-122G	Tank Line, Power Unit
13	2	HOS-92G_-8FJICx-10FJICx92.00lg. Hose	SCR, SCP	Spinner Manifold SCR, SCP
14	1	HOS-OIL_1.8MNPTx1.8MNPTx130 lg_1.8 Hose	Oiler Needle Valve	Spray Nozzle, Spinner
15	1	H26F_Female Quick Disconnect		
16	1	H26M_Male Quick Disconnect		
17	1	H53 Female Quick Disconnect		
18	1	2096-16_1.0 Pipe Coupling, HP		

100K-2GSR Spin Manifold Assembly



100K-2GSR Spin Manifold Assembly

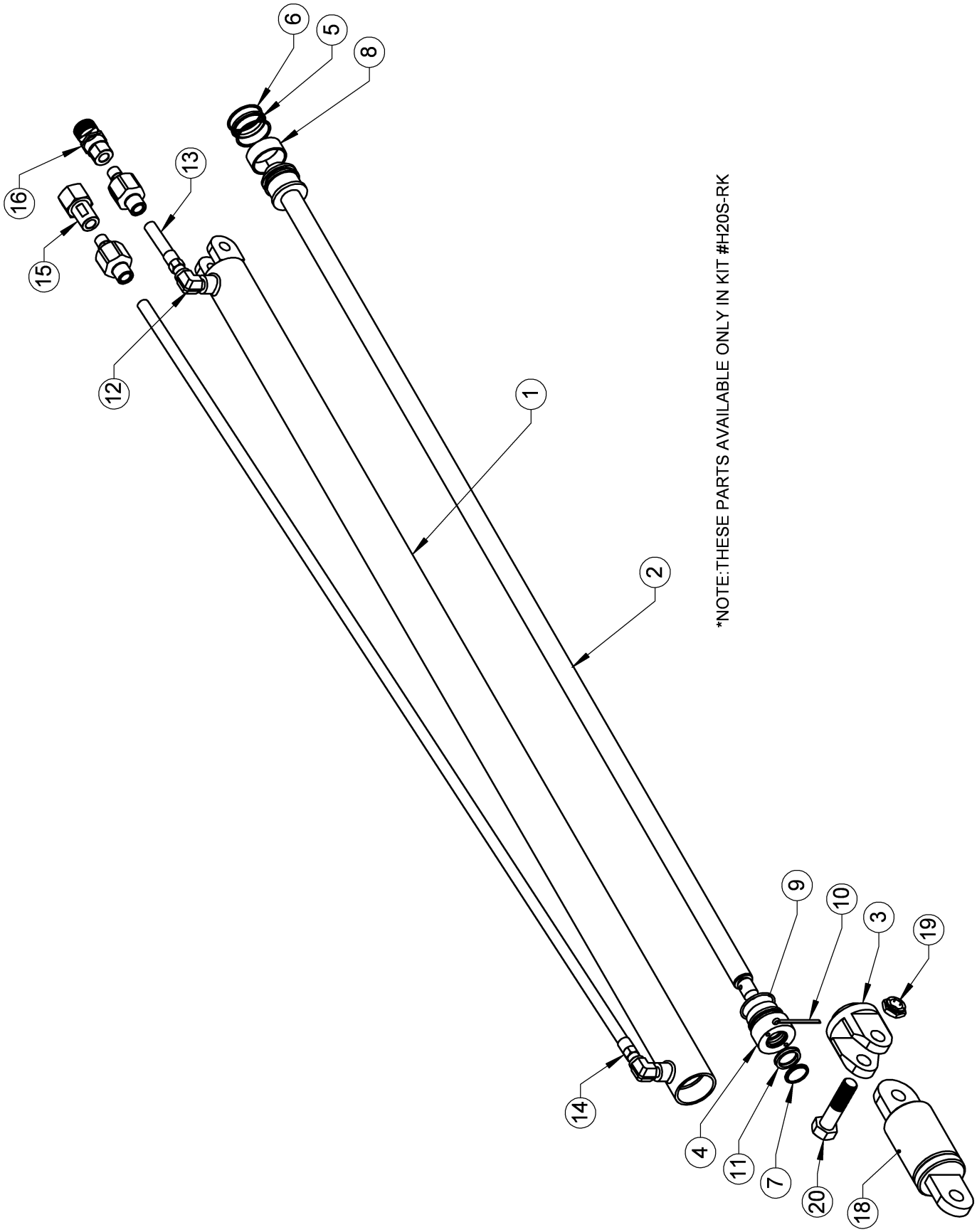
ITEM	QTY.	PART NO./DESC	PORT/DESC.	HOSE DESTINATION
1	1	H38 Spin Manifold		
2	1	H35 Sequence Valve	V2	
3	1	H34 Check Valve	V4	
4	1	H31 Flow Control Valve	V7	
5	2	H33 Check Valve	V3,V8	
6	1	H36 Pressure Reducing Valve	V1	
7	1	H45 Needle Check Valve	V9	
8	2	2062-8-8S_8MORB x 8MJIC Fitting 90		
9	1	206209-6-6S_8MORB x 8MJIC Fitting 90 Ext.		
10	1	2216-4-6S_-6MORB x-4FNPT Str. Adaptor		
11	1	2081-4-2S 1.4 x 1.8 H.P. Hex Bushing		
12	1	2254-2-2S_2MNPT x 2FNPT_T Fitting Swivel		
13	1	2216-2-4S_-4MORB x-4FNPT Str. Adaptor		
14	1	2047-2-2S 2MNPTX2FNPT Fitting 90 Drg Swivel		
15	4	202702-8-8S_-8MORB x -8MJIC Str. Adaptor		
16	1	HOS-10_-8FJICx-8FJICx33.00lg. Hose	PCR-Spin Manifold	Rod-Push Cyl.
17	1	HOS-8_-8FJICx-8FJICx49.00lg. Hose	SR-Spin Manifold	Rod-Spinmaster
18	1	HOS-7_-8FJICx-8FJICx49.00lg. Hose	SP-Spin Manifold	Piston-Spinmaster
19	1	HOS-9_-8FJICx-8FJICx24.00lg. Hose	PCP-Spin Manifold	Piston-Push Cyl.
20	1	HOS-32_1.8MNPTx1.8MNPTx17lg_1.8 Hose	RT-Spin Manifold	Winch Motor Drain
21	1	JHOS-OIL 1.8MNPTx1.8MNPTx83lg_1.8 Hose	RT1	Torque Cylinder
22	1	HOS-18_1.8MNPTx1.8MNPTx54lg_1.8 Hose	RT1	Torque Cntrl. Blk, RT

NOTE

To adjust the Spinner move forward, close and open sequence:

1. Use a 5/32" allen wrench to **rotate** the **Push cylinder pressure reducing valve** at **Port V1 counterclockwise until refusal**.
2. Use a 5/32" allen wrench to **rotate** the **Spinner Door sequence valve** at **Port V2 clockwise until refusal**.
3. Starting with the **needle valve** at **Port V9** full open (turned counterclockwise until refusal), use a 1/4" allen wrench to **rotate** the **Spinner retract needle valve** at **Port V9 clockwise** until the spinner doors **open fully**. Then rotate the valve in the same direction another **1/2 turn**, then lock the valve.
4. Use a 5/32" allen wrench to **rotate** the **Spinner motor sequence valve** at **Port MSEQ on** the **main** hydraulic **block clockwise until refusal**.
5. Set the **Selector switch** to **Break**. **Adjust** the **spinner** to the drill pipe tube OD. **Place** the **HawkJaw on** the **drill pipe** connection.
6. **Press** the **Grip Hold** button. **Press** the **Spin** button. **Rotate** the **Push cylinder pressure reducing valve** at **Port V1 clockwise until** the spinner moves forward and the **chain touches** the **pipe**. **If** the **chain forces** the **HawkJaw away from** the **pipe**, **back off on** the **adjustment** until the spinner chain touches the pipe without forcing the Hawkjaw back. The spinner will close if you hold the spin button too long.
7. **Rotate** the **Spinner Door sequence valve** at **Port V2 counterclockwise until** the spinner **doors begin to close as** the spinner **chain touches** the **pipe**. For **each adjustment**, **press and hold** the **Spin** button **to test** the **adjustment**. Continue to **rotate** the **adjustment counterclockwise until** the **spinner begins to close before** the **chain touches** the **pipe**. **Rotate** the **adjustment clockwise until** the **spinner begins to close as** the spinner **chain touches** the **pipe**. **Lock in** the **adjustment**.
8. For **each adjustment**, **press and hold** the **Spin** button **until** the **spinner doors close**. **Release** the **Spin** button **to test** the **adjustment**. **If** the **rollers grab** the **pipe while retracting**, **adjust** the **needle valve clockwise**. **If** the **chain forces** the **HawkJaw backwards while retracting**, **adjust** the **needle valve counterclockwise**.
9. A**djust** the **spinner motor sequence valve** at **Port MSEQ**. Use a 3/16" allen wrench to **rotate** the sequence valve **counterclockwise until** the **chain moves before** the **doors close**. Next, **rotate** the adjustment **clockwise until** the spinner **doors close before** the **chain moves**. **Rotate one half-turn clockwise**. **Lock in** the **adjustment**.

100K-2GSR Raise/Lower Cylinder Assembly

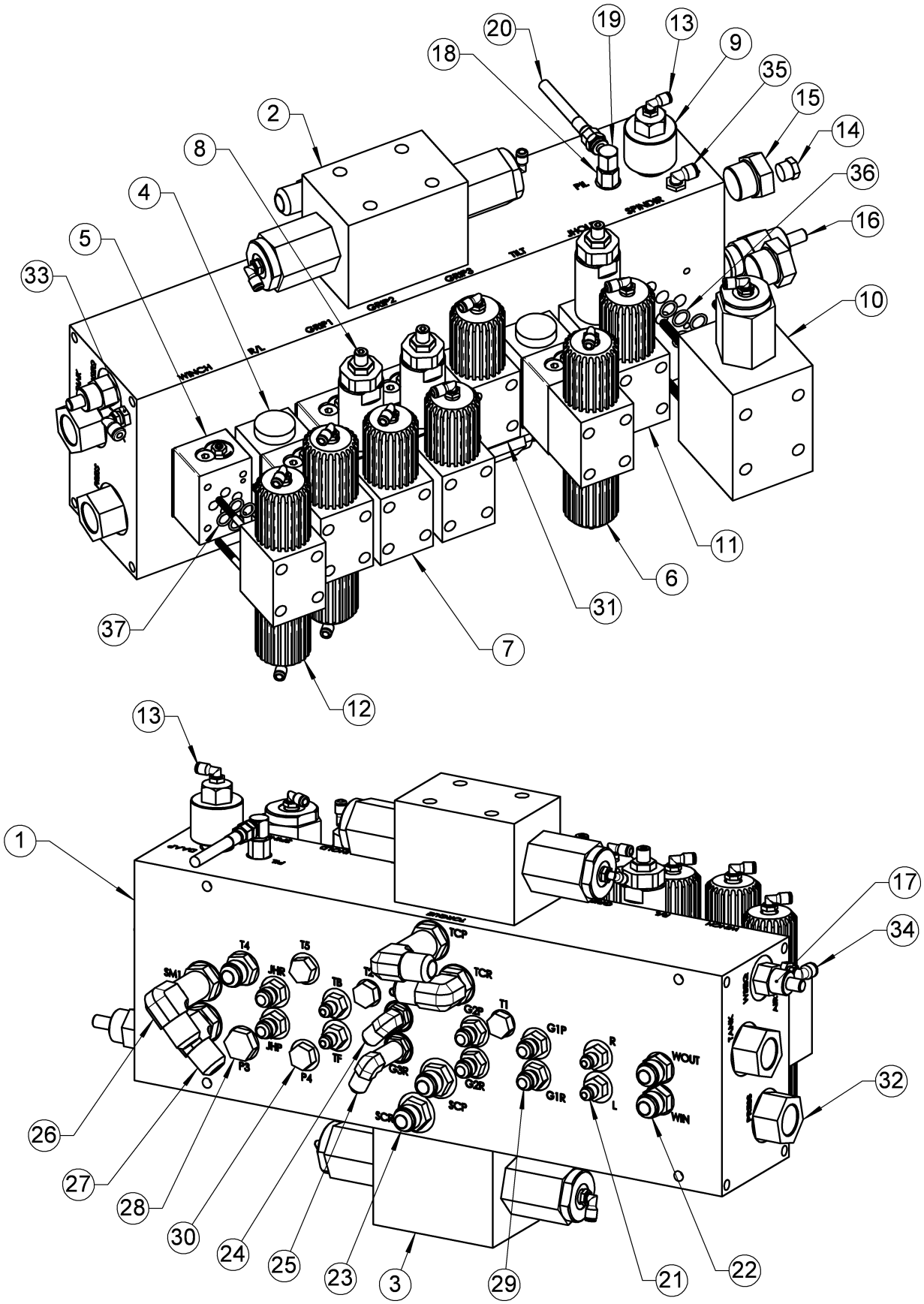


100K-2GSR Raise/Lower Cylinder Assembly

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	2572-9 Barrel, Raise Lower Cylinder	
2	1	2572-6 Rod, Raise Lower Cylinder	
3	1	2572-8 Rod Clevis, Raise Lower Cylinder	
4	1	2572-7 Seal Retainer, Raise Lower Cyl.	
5	1	TPO-28 Piston Seal	*
6	2	TPO-28 Backup, Piston Seal	*
7	1	940-15 Rod Wiper, Raise Lower Cyl.	*
8	1	MCD-2500-1000 Wear Ring, Raise lower Cyl.	*
9	1	2-228-90 O Ring	*
10	1	2572-5 Cotter Pin 3.16 dia. x 3.5 lg, Raise Lower Cyl.	
11	1	1870-1375-312B Rod Seal, Raise Lower Cyl.	*
12	2	2089-8-8S_8MNPT x 8FNPT Fitting 90 Elbow	
13	1	HOS-23_1.2 MNPT x 1.2 MNPTx 8.50lg.-8Hyd. Hose	
14	1	HOS-22_1.2 MNPT x 1.2 MNPTx 84.0lg.-8Hyd. Hose	
15	1	H26F_Female Quick Disconnect	
16	1	H26M_Male Quick Disconnect	
17	2	FS59004 Swivel Joint	
18	1	20230 Swivel Assembly	
19	1	806594-500_1-14 Lock Nut	
20	1	806622_1.00-14 x 4.00lg. Hex Bolt	

*NOTE:THESE PARTS AVAILABLE ONLY IN KIT #H20S-RK

100K-2GSR Main Manifold Assembly



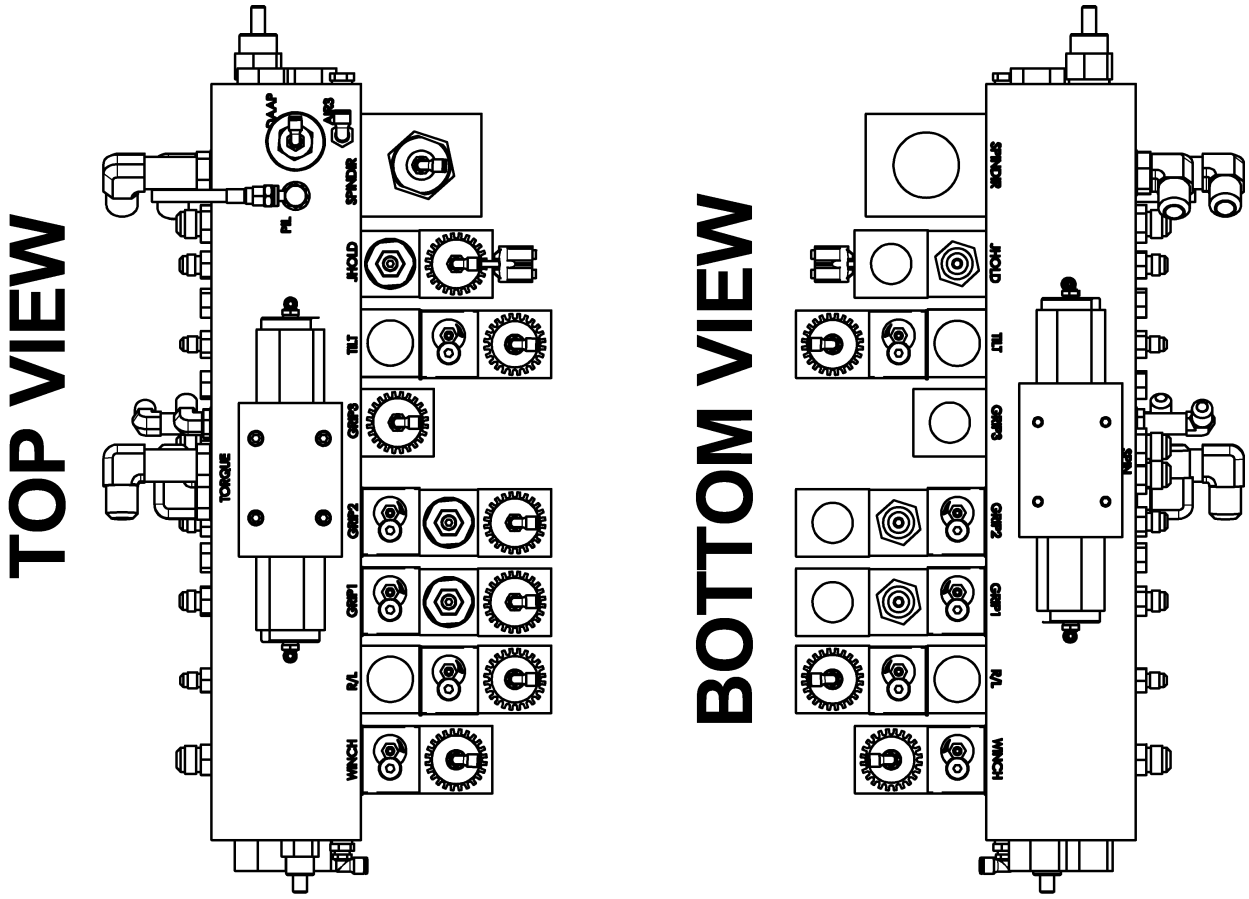
100K-2GSR Main Manifold Assembly

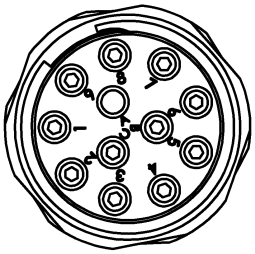
ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	J1A-A Main Manifold	
2	1	V6APBCP_DO5_Assembly	
3	1	V6ABT_DO5_Assembly	
4	2	H7 Pilot Check Sandwich Assembly	
5	5	H6 Flow Control Sandwich Assembly	
6	2	H53S Directional Valve Assembly	
7	2	H93S Directional Valve Assembly	
8	3	H6P Pressure Control Sandwich	
9	1	H4B Air Piloted 2-Way Valve	
10	1	V6SR_DO5_Assembly	
11	1	H9JR 3Grip Valve	
12	1	H5 Directional Valve Assembly	
13	16	A46 5.32 x 1.8 PTC Elbow	
14	1	2082-4S_1.4 Pipe Plug	
15	2	9005912-12S_MORB Plug	
16	1	H35 Sequence Valve	
17	1	H72 Sequence Valve	
18	1	2216-2-4S_-4MORB x-4FNPT Str. Adaptor	
19	1	2047-2-2S 2MNPTX2FNPT Fitting 90 Drg Swivel	
20	1	HOS-OIL_1.8MNPTx1.8MNPTx130 lg_1.8 Hose	
21	4	202702-6-4S_-6MORB x -4MJIC Str. Adaptor	
22	2	202702-6-8S_-6MORB x -8MJIC Str. Adaptor	
23	3	202702-8-8S_-8MORB x -8MJIC Str. Adaptor	
24	1	2062-6-6S_6MORB x 6MJIC Fitting 90	
25	1	206209-6-6S_6MORB x 6MJIC Fitting 90 Ext.	
26	2	206209-10-10S_10MORB x 10MJIC Fitting 90 Ext.	
27	2	2062-10-10S_10MORB x 10MJIC Fitting 90	
28	1	900598-8S_MORB Plug	
29	6	202702-6-6S_-6MORB x -6MJIC Str. Adaptor	
30	4	900598-6S_MORB Plug	
31	1	H94S Directional Valve	
32	2	2216-1212S Adaptor, Hydraulic	
33	1	2081-4-2S 1.4 x 1.8 H.P. Hex Bushing	
34	1	A47 3.16 x 1.8 PTC Elbow	
35	1	A48 1.4 x 1.4 PTC Elbow	
36	4	DO5 O Ring, Viton	
37	4	D03 O Ring, Viton	

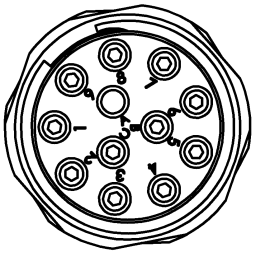
VALVE ADJUSTMENT

FUNCTION	PORT	PRESSURE/ADJUSTMENT
RAISE/LOWER CYL	R/L	**Flow Cntrl. Valve (H6)**; Screw **in** for FASTER mvmnt., **out** for SLOWER mvmnt. (top screw LOWER adj., bottom UPPER adj.)
BOTTOM WRENCH	GRIP1	**Pressure (H6P)** Preset to 1000psi; Screw in for higher pressure, out for lower pressure; **Flow Cntrl. Valve (H6)**; Screw out for more flow, in for less flow
MIDDLE WRENCH	GRIP2	**Pressure (H6P)** Preset to 1000psi; Screw in for higher pressure, out for lower pressure; **Flow Cntrl. Valve (H6)**; Screw out for more flow, in for less flow
UNIT TILT	TILT	**Flow Cntrl. Valve (H6)**; Screw **in** for faster mvmnt., **out** for slower mvmnt. (top screw FORWARD tilt, bottom for BACKWARD tilt)
WINCH	WINCH	**Flow Cntrl. Valve (H6)**; Screw **in** for **faster** mvmnt., screw **out** for **slower** mvmnt.
MOTOR SEQUENCE	MSEQ	Sequences the spinner motor to begin turning at the correct time; **3/16" socket wrench** turn in to **delay motor start**, turn out to **advance motor start**

100K-2GSR Main Manifold Air Connections







100K-2GSR Main Manifold Air Connections

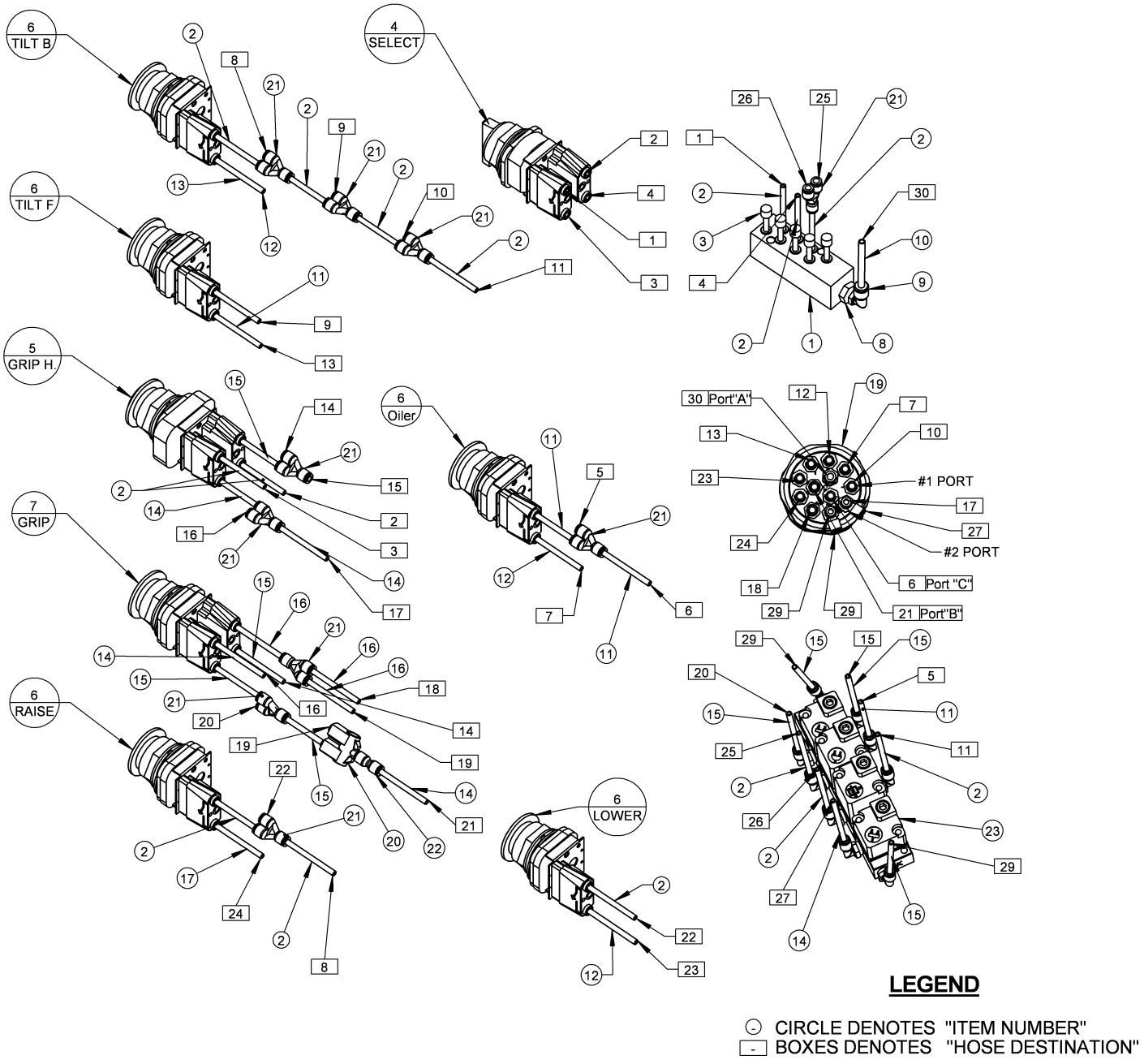
LEFT CONNECTOR

DUPLICATE	PORT	DESCRIPTION	COLOR	SIZE
	A	AIR SUPPLY	BLACK	3/16
	B	AIR SUPPLY TORQUE	YELLOW	5/32
	C	AIR SUPPLY SPIN	CLEAR	5/32
	1	AIR SUPPLY WINCH	RED	5/32
X	2	GRIP #1	YELLOW	5/32
	3	GRIP #2	ORANGE	5/32
	4	GRIP #3	BLUE	5/32
	5	RAISE VALVE SIDE "b"	GREEN	5/32
X	6	LOWER VALVE SIDE "a"	BLACK	5/32
X	7	TILT VALVE SIDE "b"	CLEAR	5/32
	8	TILT VALVE SIDE "a"	GREY	5/32
	9	OILER	BLACK	5/32

RIGHT CONNECTOR

DUPLICATE	PORT	DESCRIPTION	COLOR	SIZE
	A	SUPPLY FRONT FILTER AIR 1	CLEAR	3/16
	B	SUPPLY RETURN	BLACK	3/16
	C	SUPPLY TORQUE	YELLOW	5/32
	1	SUPPLY WINCH	RED	5/32
	2	SUPPLY SPIN	CLEAR	5/32
	3	TORQUE VALVE SIDE "a"	GREY	5/32
	4	TORQUE VALVE SIDE "b"	BLUE	5/32
	5	SPIN VALVE SIDE "b"	GREEN	5/32
	6	SPIN VaLVE SIDE "a"	ORANGE	5/32
	7	WINCH VALVE SIDE "b"	BLACK	5/32
X	8	WINCH VALVE SIDE "a"	GREY	5/32
X	9	SPARE	GREEN	5/32

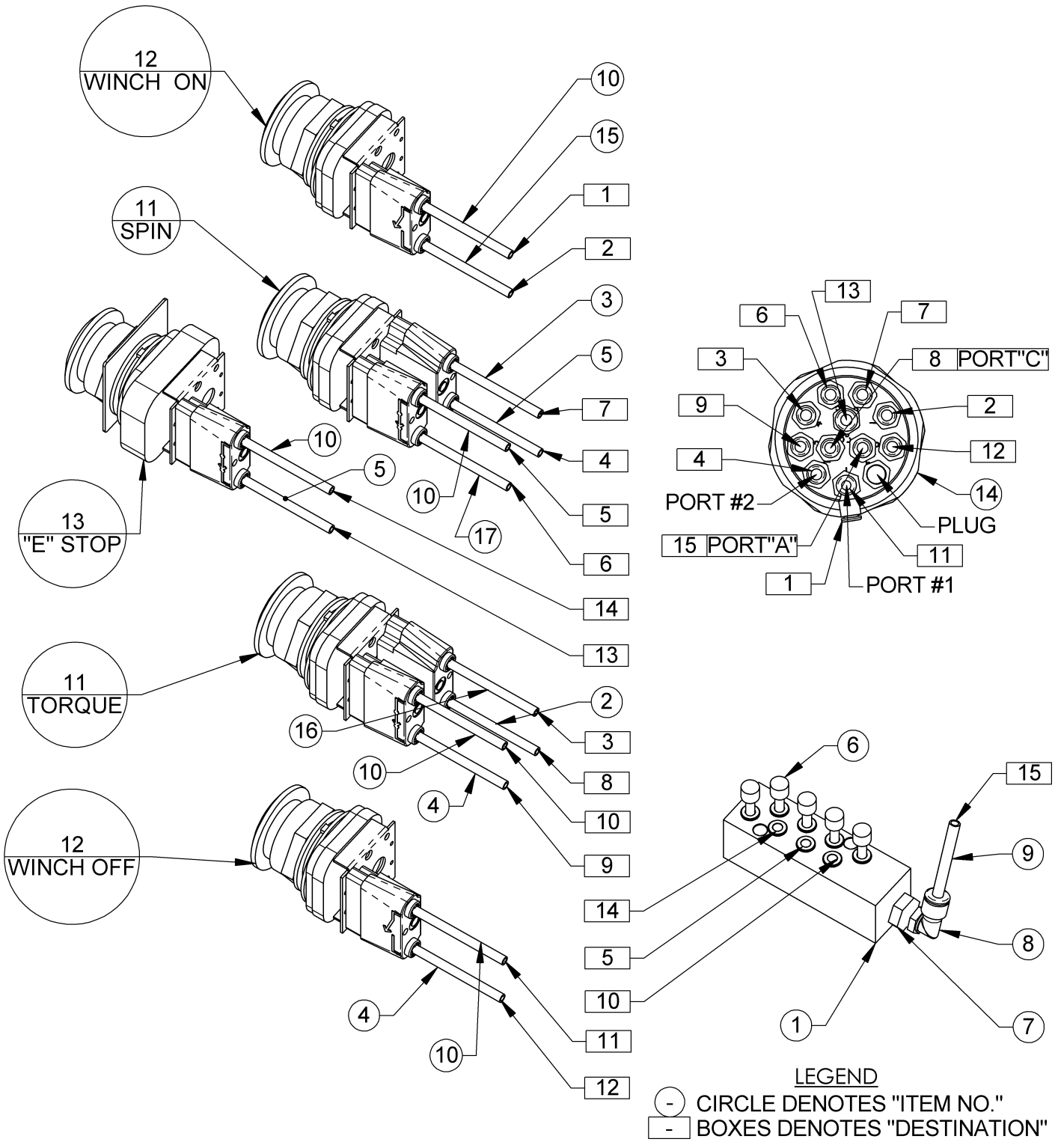
100K-2GSR Left Control Handle Air Connections



100K-2GSR Left Control Handle Air Connections

ITEM NO.	QTY.THIS ASSY.	PART NO./ DESCRIPTION	COMMENTS
1	1	A15 Air Manifold	
2	16	A40-5 Red Air Hose	
3	5	A36 Port Plug	
4	1	A1 Selector Switch Assembly	
5	1	A8GH Grip Hold Button Assy	
6	5	A3 Button Air Valve Assembly	
7	1	A4G Grip Valve Assembly	
8	1	2081-4-2S 1.4 x 1.8 H.P. Hex Bushing	
9	1	A47 3.16 x 1.8 PTC Elbow	
10	1	A40L-4_3.16 Black Air Hose	
11	4	A40-4 Clear Air Hose	
12	2	A40-6 Black Air Hose	
13	1	A40-8 Gray Air Hose	
14	5	A40-1 Yellow Air Hose	
15	8	A40-2 Orange Air Hose	
16	3	A40-3 Blue Air Hose	
17	1	A40-7 Green Air Hose	
19	1	A11-LCH Multiplex Connector Assembly	See Explosion
20	1	J37 'Or' Element Connector	
21	10	A52 Y PTC Fitting	
22	1	A53 PTC Coupler Fitting	
23	1	59063-2GSR_Logic Manifold Assembly	

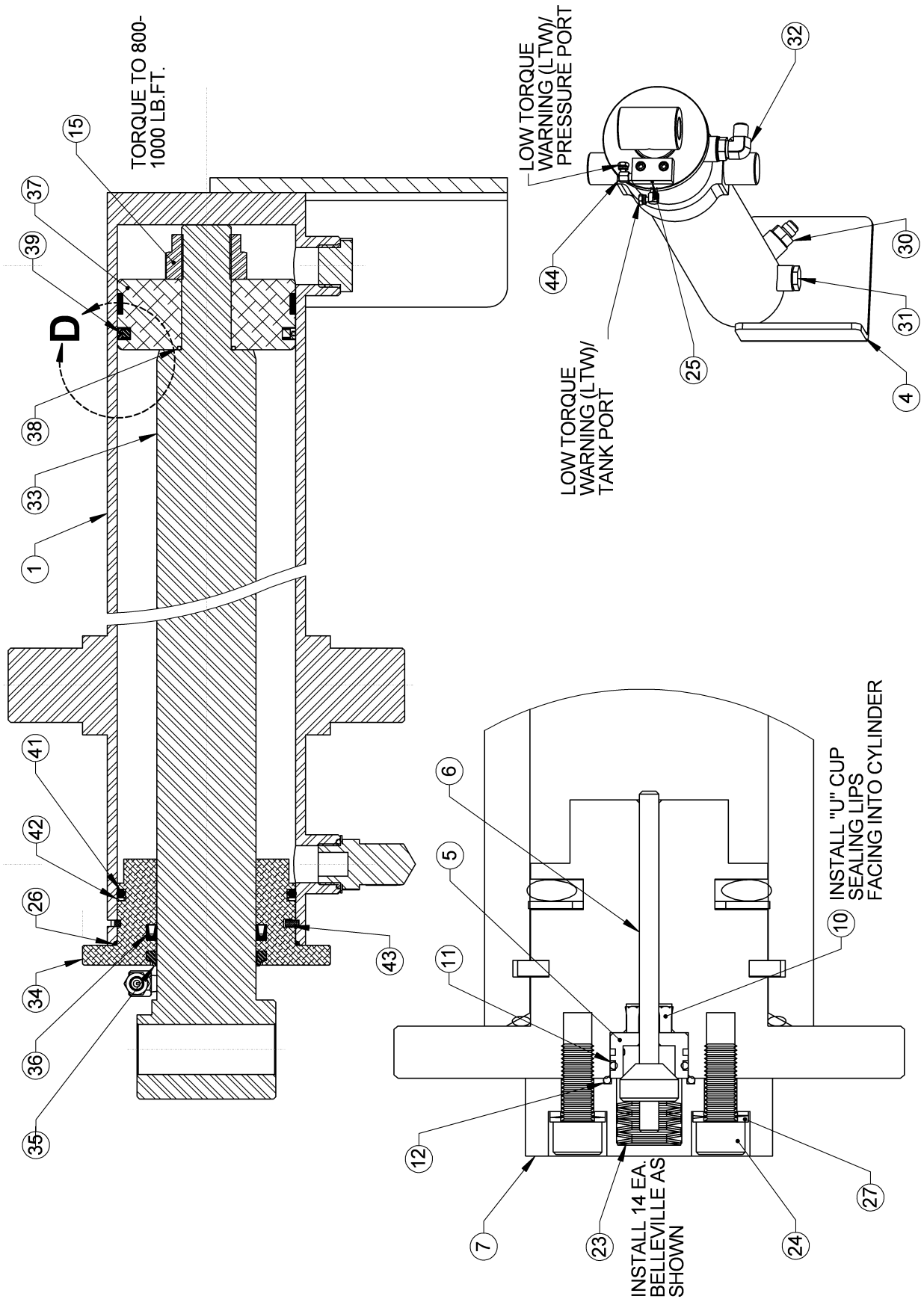
100K-2GSR Right Control Handle Air Connections



100K-2GSR Right Control Handle Air Connections

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	A15 Air Manifold	
2	1	A40-1 Yellow Air Hose	
3	1	A40-2 Orange Air Hose	
4	2	A40-8 Gray Air Hose	
5	2	A40-4 Clear Air Hose	
6	5	A36 Port Plug	
7	1	2081-4-2S 1.4 x 1.8 H.P. Hex Bushing	
8	1	A47 3.16 x 1.8 PTC Elbow	
9	1	A40L-4_3.16 Black Air Hose	
10	5	A40-5 Red Air Hose	
11	2	A20 Button Air Valve Assembly	
12	2	A3 Button Air Valve Assembly	
13	1	A80 'E' Stop Button Assy	
14	1	A11-RCH Multiplex Connector Assembly	
15	1	A40-6 Black Air Hose	
16	1	A40-3 Blue Air Hose	
17	1	A40-7 Green Air Hose	

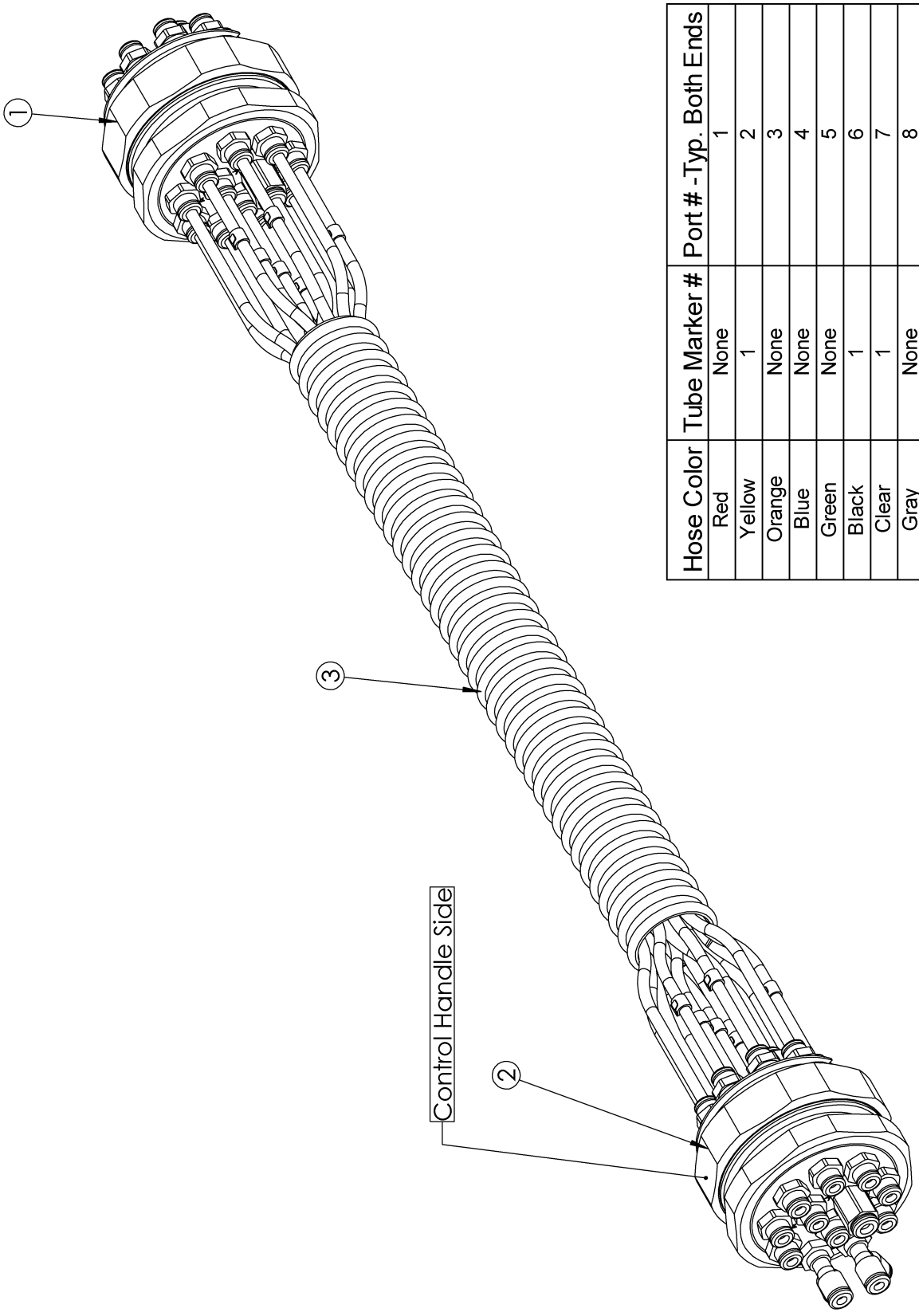
100K-2GSR Torque Cylinder Assembly



100K-2GSR Torque Cylinder Assembly

ITEM NO.	QTY.	PART NO./ DESCRIPTION	COMMENTS
1	1	4H080 Tube Assembly	
4	1	20259 Torque Cylinder Guard	
5	1	20238 Poppet Seat	***
6	1	30064 Poppet Pin	***
7	1	30065 Body, Poppet Valve	
10	1	LTW-RK U Cup, Poppet Pin	**
11	1	PRP568-016 O Ring, Poppet Seat	**
12	1	PRP568-018 O Ring, Body	**
15	1	20011_1 1.4 Flex Nut, H17 Torque Cylinder	
16	1	11963 Seal Retainer, H17 Torque Cylinder	
19	1	11963 Spring, Seal	
23	14	022S Bellville Spring	
24	2	805959_5.16-24 x .75 Socket Head Cap Screw	
25	1	809396-1_10-32 x .25 Socket Head Set Screw	
26	1	10904 O Ring, H17 Torque Cylinder	
27	2	91074A030 Lock Washer Assembly, 5.16	
28	1	1103K1 Grease Fitting, Straight	
30	1	202702-12-10S_-12MORB x -10MJIC Str. Adaptor	
31	1	900598-12S_MORB Plug	
32	1	2062-12-10S_12MORB x 10MJIC Fitting 90	
33	1	5C475 Rod, H17 Torque Cylinder	
34	1	74483 Head, Torque Cylinder	
35	1	10007 Rod Wiper, Torque Cylinder	*
36	1	10017 Rod Seal, Torque Cylinder	*
37	1	73225 Piston, Torque Cylinder	
38	1	10418 O Ring, Torque Cylinder Rod	*
39	1	11963 Seal	*
40	1	30218 Bearing, Piston H17 Torque Cylinder	*
41	1	10236 O Ring, H17 Torque Cylinder	*
42	1	10237 O Ring Backup, Torque Cylinder	*
43	1	20087 Retainer Ring, H17 Torque Cylinder	
44	2	2047-2-2S 2MNPTX2FNPT Fitting 90 Drg Swivel	
		* These parts are kitted Hawk P/N J20-RK	
		** These parts are kitted Hawk P/N/ LTW-RK	
		*** These parts are available in set only as P/N LTW-P/S	

100K-2GSR Left Control Tube Assy Air Conn

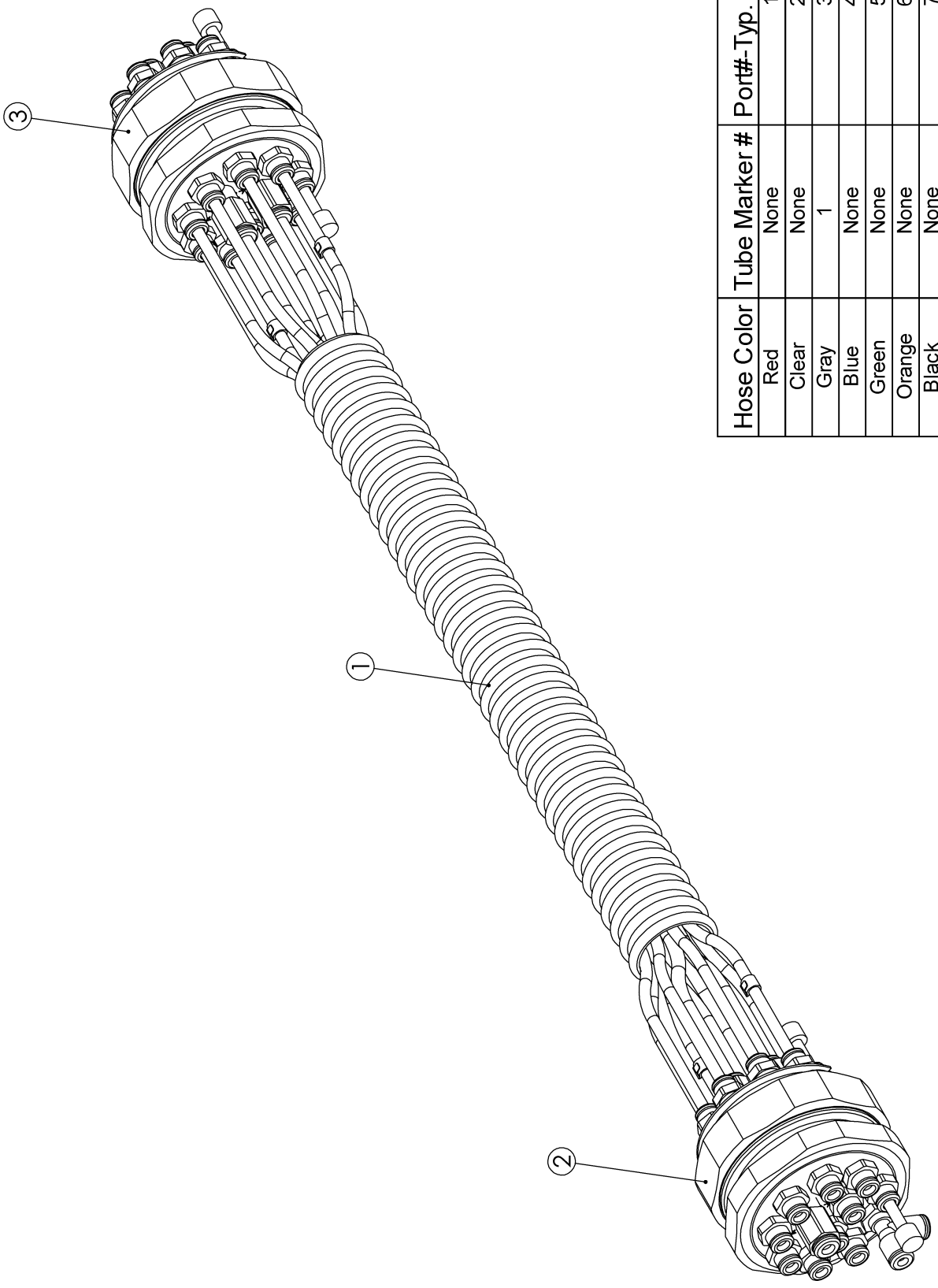


Hose Color	Tube Marker #	Port # -Typ. Both Ends
Red	None	1
Yellow	1	2
Orange	None	3
Blue	None	4
Green	None	5
Black	1	6
Clear	1	7
Gray	None	8
Black	2	9
Black 3/16"	None	A
Yellow	2	B
Clear	2	C

100K-2GSR Left Control Tube Assy Air Conn

ITEM NO.	QTY.THIS ASSY	PART NO./DESCRIPTION	COMMENTS
1	1	A11-1LCH Multiplex Connector Assembly	See Explos. Drw.
2	1	A11-LCH Multiplex Connector Assembly	See Explos. Drw.
3	1	A11LFT Left Control Tube Assembly	

100K-2GSR Right Control Tube Assy Air Conn

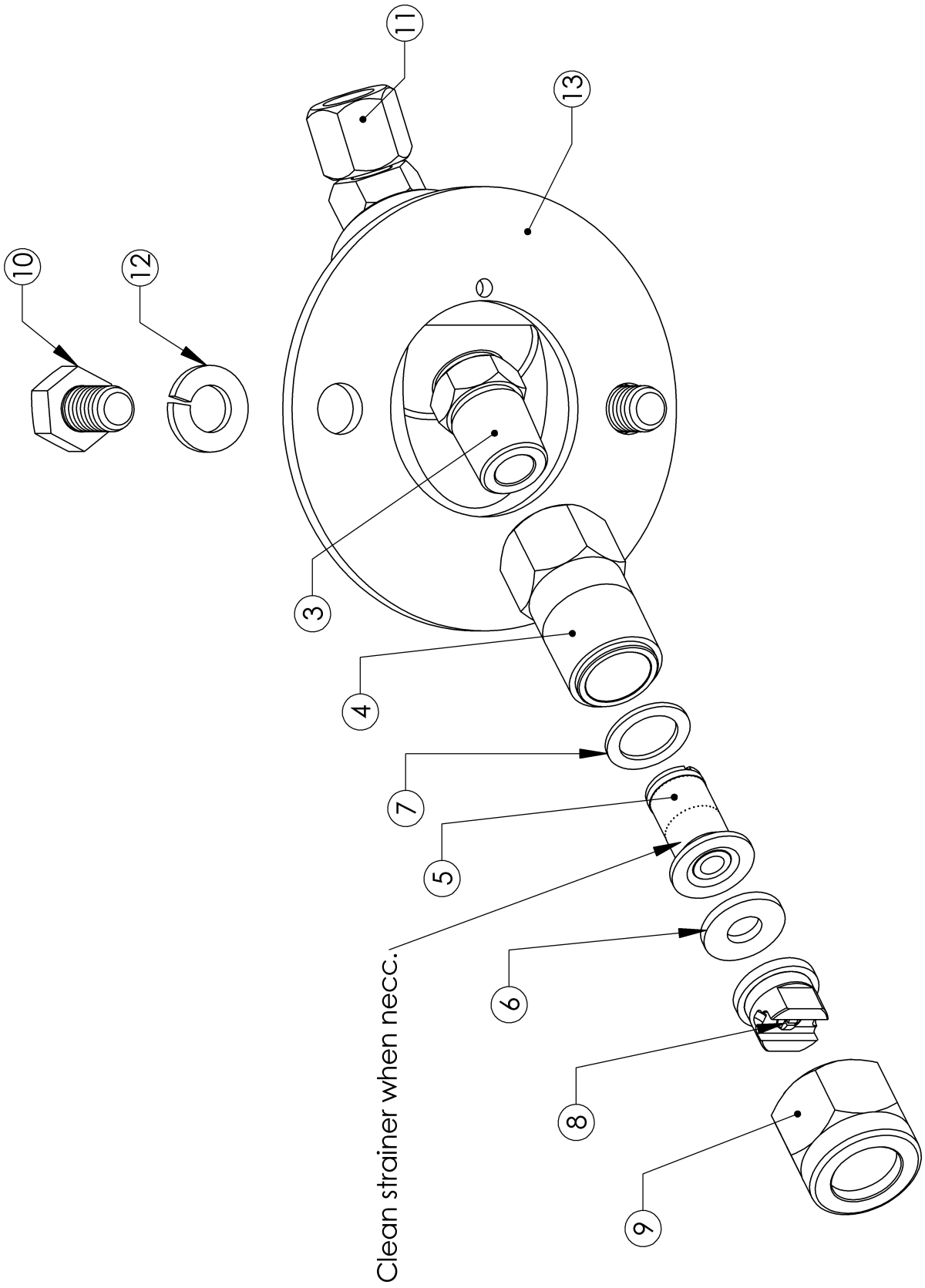


Hose Color	Tube Marker #	Port#-Typ. Both Ends
Red	None	1
Clear	None	2
Gray	1	3
Blue	None	4
Green	None	5
Orange	None	6
Black	None	7
Gray	2	8
Plugged	None	9
Black 3/16"	None	A
Clear 3/16"	None	B
Yellow	None	C

100K-2GSR Right Control Tube Assy Air Conn

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	A11-RT_Right Control Tube Assembly	See Explosion
2	1	A11-RCH Multiplex Connector Assembly	See Explosion
3	1	A11-2RCH Multiplex Connector Assembly	

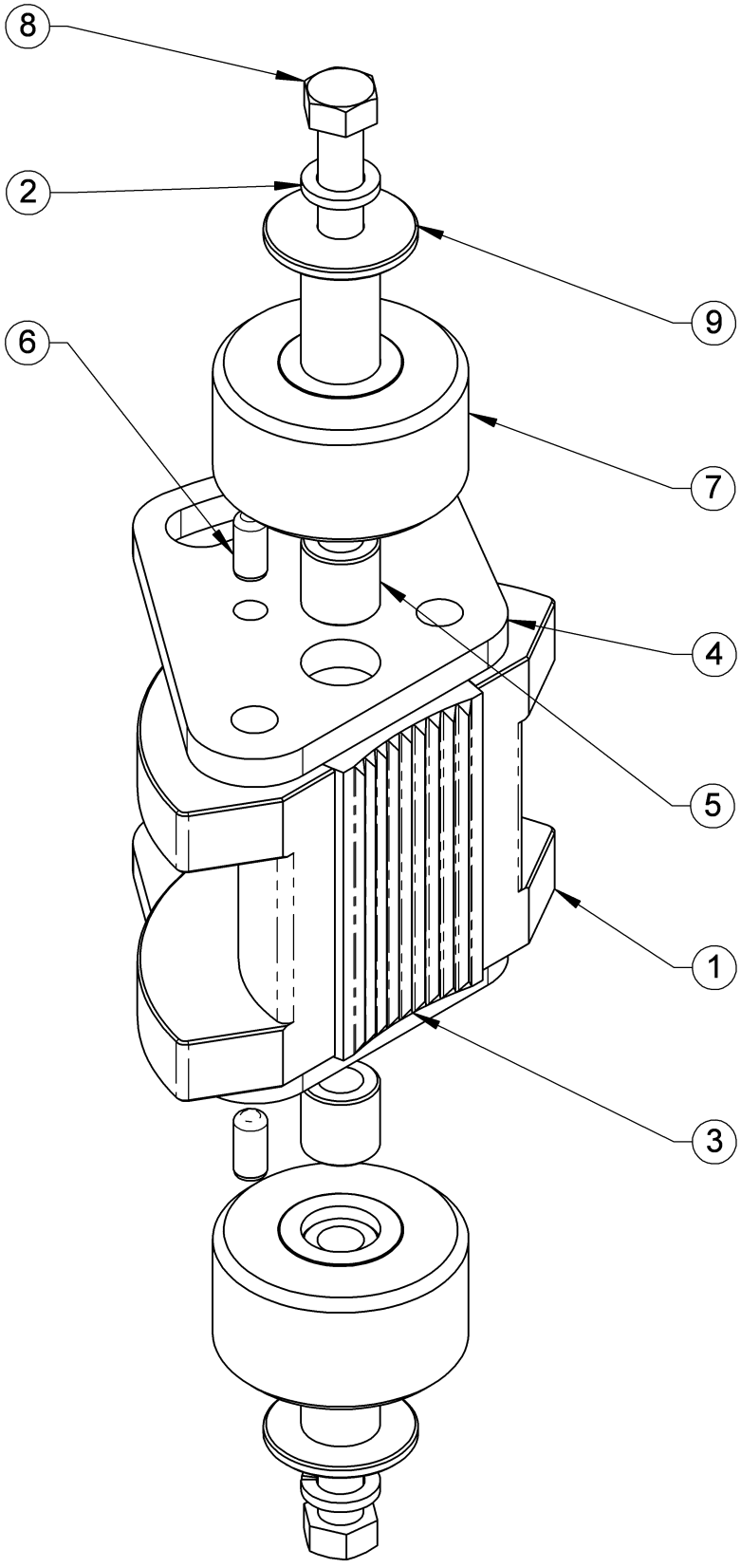
25726 Chain Oiler Assembly



25726 Chain Oiler Assembly

ITEM NO.	QTY.THIS ASSY	PART NO./ DESCRIPTION	COMMENTS
3	1	2083-4-45 1-4 NPT ADAPTER	
4	1	11432-SSP Body, SST, Polished	
5	1	8536-200 STRAINER, SST	
6	1	7894-NY TIP GASKET, NYLON	
7	1	7894-NY TIP GASKET, NYLON	
8	1	TP400025-TC .013 Nozzle	
9	1	7890-SSP CAP,SST, POLISHED	
10	2	805916_5.16-18 x .50 LG. HEX BOLT	
11	1	2049-2-2 1-8,45 Drg Adapter	
12	2	810616_5.16 Lock Washer	
13	1	25726 Chain Oiler Weldment	

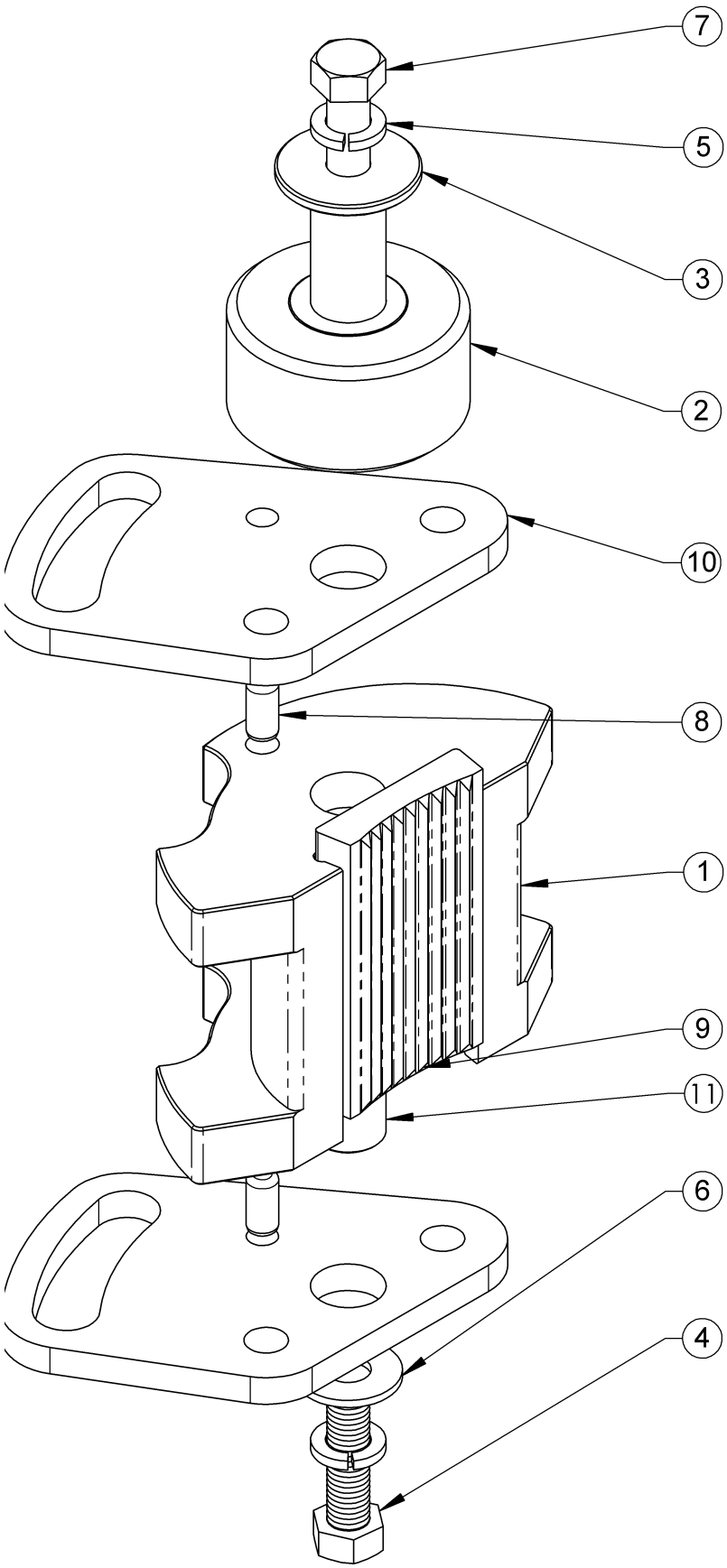
20209-BOT Heel Die Holder Assembly, Bottom



20209-BOT Heel Die Holder Assembly, Bottom

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	20192-1B Die Holder, Heel Side	
2	2	810703_1.2 Lock W asher	
3	1	20194 Die	
4	2	20212-1A Retainer, Heel Die	
5	2	20208-870 Spacer, Die Holder	
6	2	98381A622_3.8 Dia. x .75 lg. SS Dowel Pin	
7	2	20210 Roller Assembly	
8	2	806307_1.2-13 x 3.25 lg. Hex Bolt	
9	2	20208A Spacer Bushing, Roller	

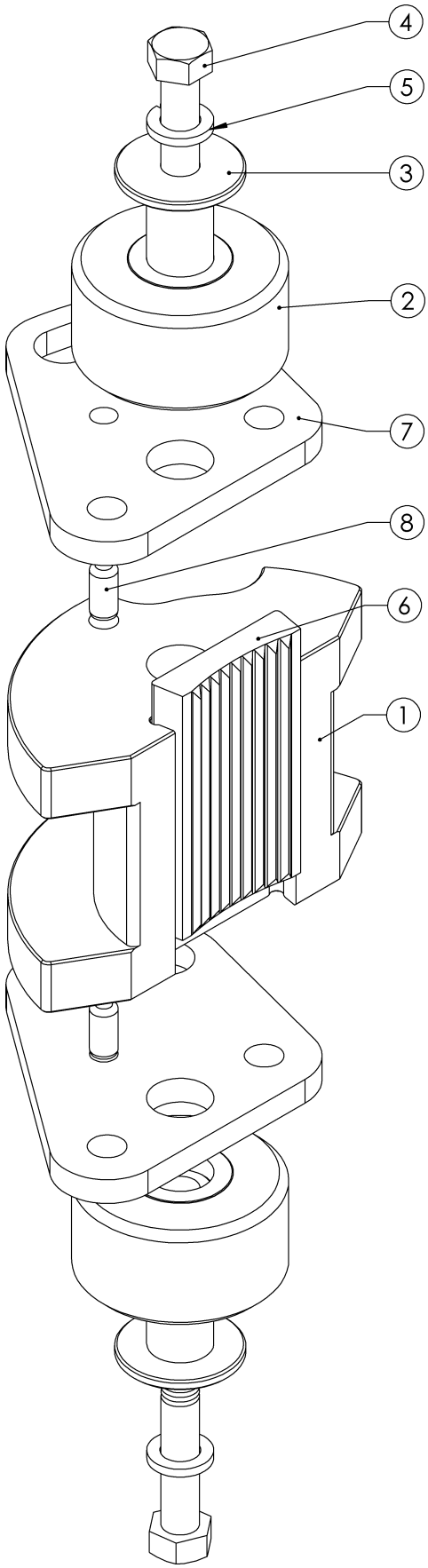
20209-MID Heel Die Holder Assembly, Middle



20209-MID Heel Die Holder Assembly, Middle

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	20192-1B Die Holder, Heel Side	
2	1	20210 Roller Assembly	
3	1	20208A Spacer Bushing, Roller	
4	1	806276_1.2-13 x 1.75 Hex Bolt	
5	2	810703_1.2 Lock Washer	
6	1	810705_1.2 Flat Washer	
7	1	806307_1.2-13 x 3.25 lg. Hex Bolt	
8	2	98381A622_3.8 Dia. x .75 lg. SS Dowel Pin	
9	1	20194 Die	
10	2	20212-1A Retainer, Heel Die	
11	1	20208-870 Spacer, Die Holder	

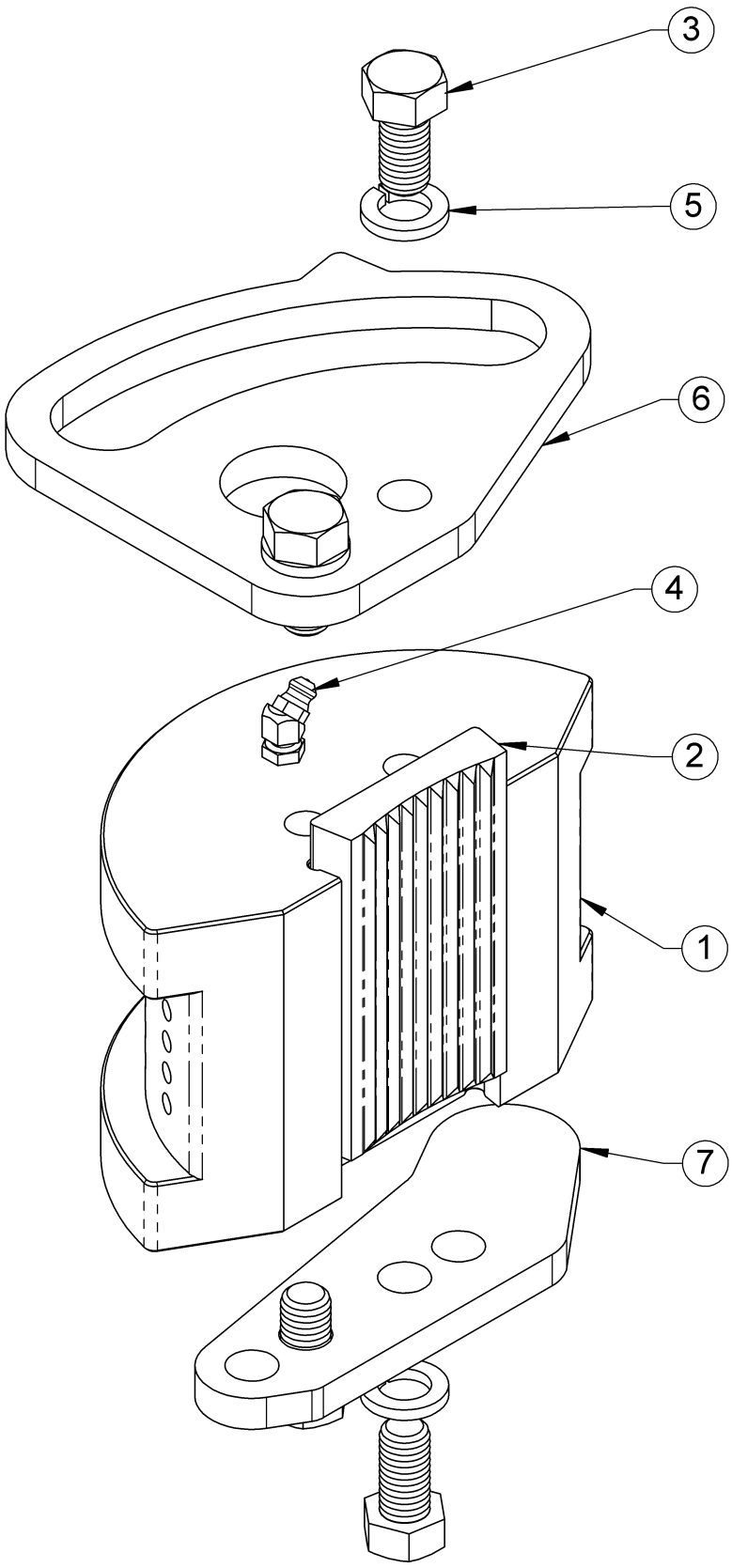
20209-TOP Heel Die Holder Assembly, Top



20209-TOP Heel Die Holder Assembly, Top

ITEM NO.	QTY.THIS ASSY	PART NO./ DESCRIPTION	COMMENTS
1	1	20192-1B Die Holder, Heel Side	
2	2	20210 Roller Assembly	
3	2	20208A Spacer Bushing, Roller	
4	2	806307_1.2-13 x 3.25 lg. Hex Bolt	
5	2	810703_1.2 Lock Washer	
6	1	20194 Die	
7	2	20212-1A Retainer, Heel Die	
8	2	98381A622_3.8 Dia. x .75 lg. SS Dowel Pin	

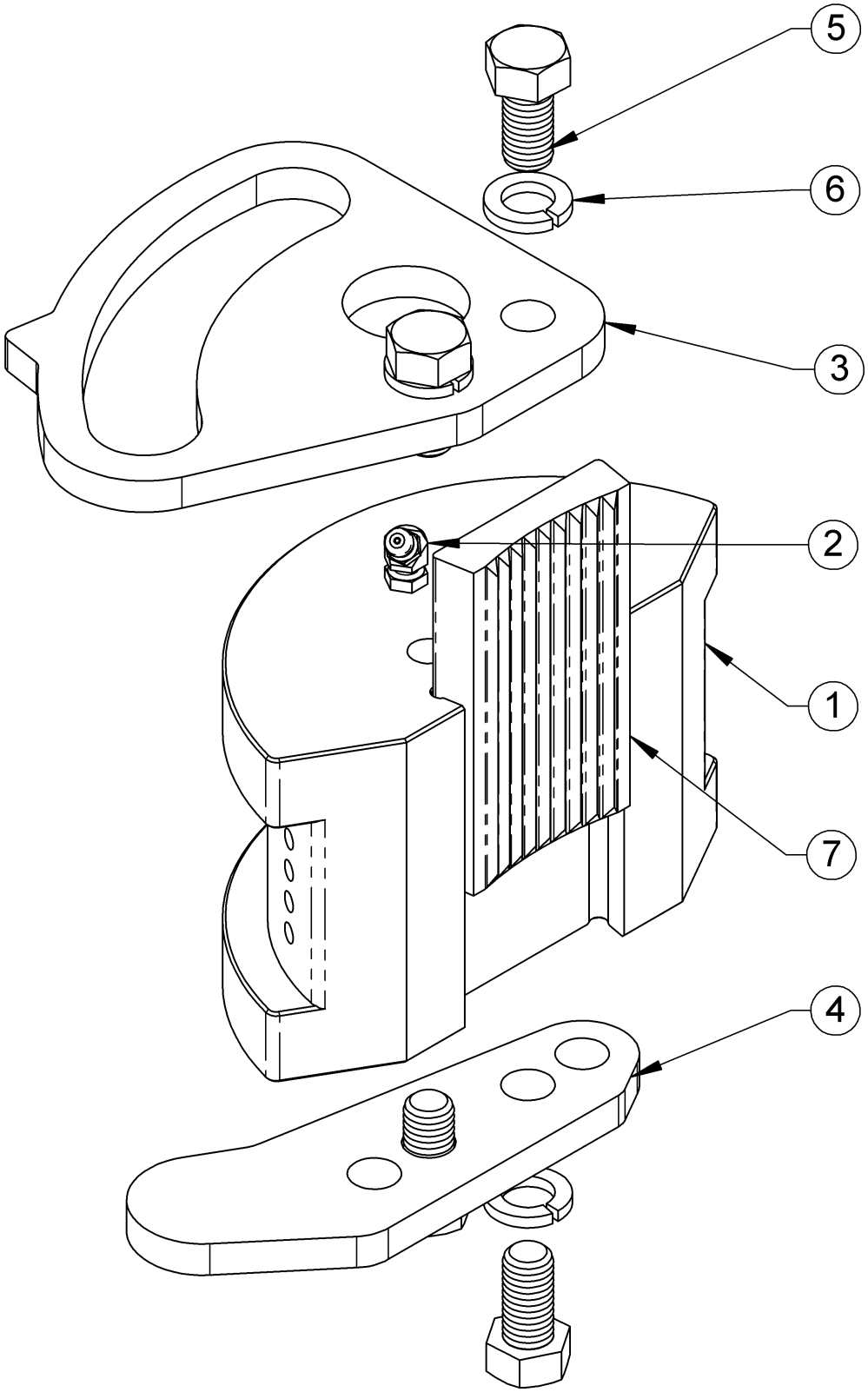
20211-MID Hook Die Holder Assembly, Middle



20211-MID Hook Die Holder Assembly, Middle

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	20192B Die Holder, Hook Side	
2	1	20194 Die	
3	4	806246_1.2-13 x 1.00 Hex Bolt Grd. 9	
4	1	1103K2 Grease Fitting, 45 Degree	
5	4	810703_1.2 Lock Washer	
6	1	20212A Die Retainer, Upper Hook	
7	1	20213 Die Retainer, Bottom	

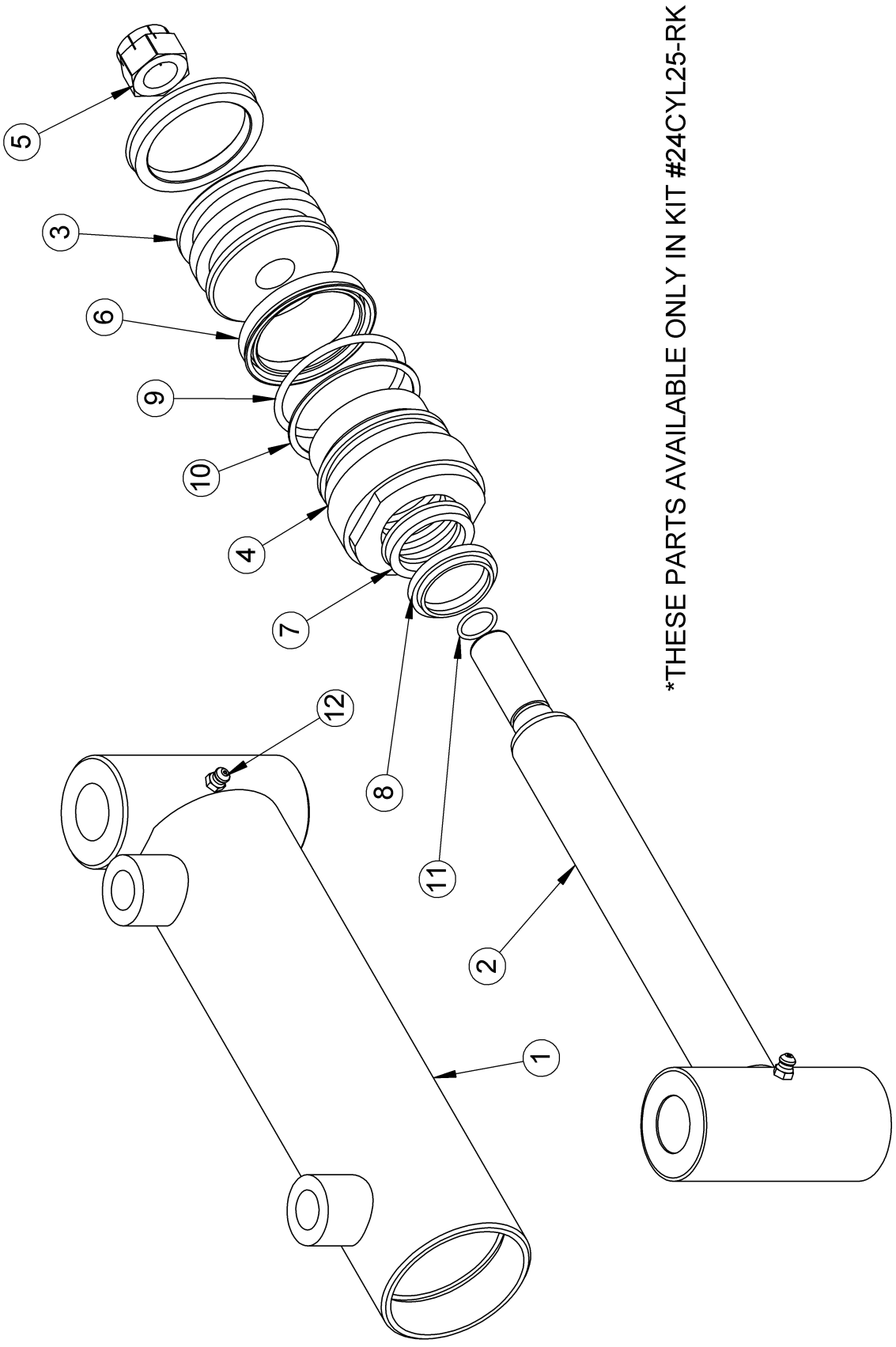
20211-TB Hook Die Holder Assembly, Middle



20211-TB Hook Die Holder Assembly, Middle

ITEM NO.	QTY./THIS ASSY	PART NO./ DESCRIPTION	COMMENTS
1	1	20192B Die Holder, Hook Side	
2	1	1103K2 Grease Fitting, 45 Degree	
3	1	20212A Die Retainer, Upper Hook	
4	1	20213 Die Retainer, Bottom	
5	4	806246_1.2-13 x 1.00 Hex Bolt Grd. 9	
6	4	810703_1.2 Lock Washer	
7	1	20194 Die	

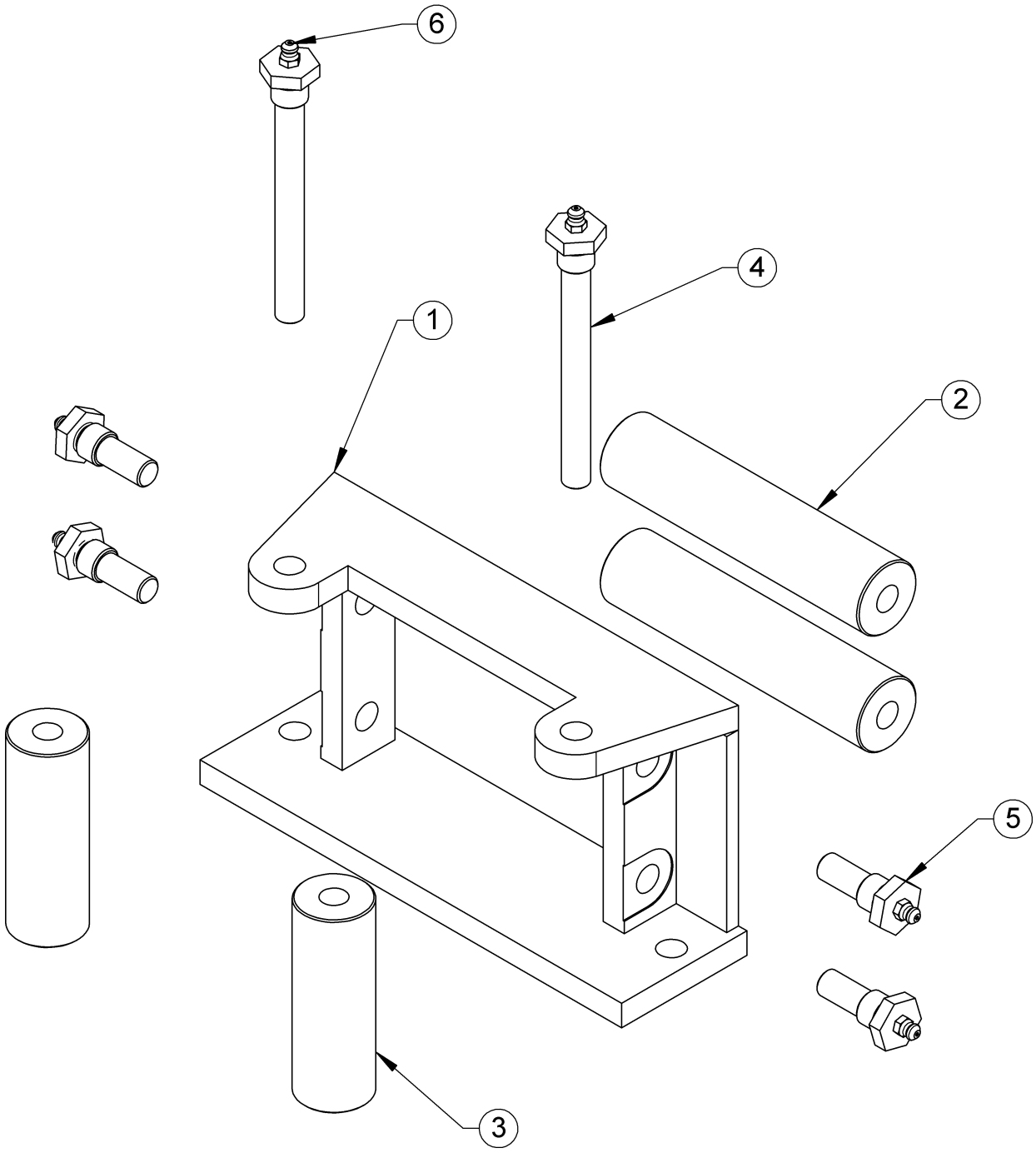
CYL25-AS Top, -BS Bottom Spinner Grip Cyl



CYL25-AS Top, -BS Bottom Spinner Grip Cyl

ITEM NO.	QTY.THIS ASSY	PART NO./DESCRIPTION	COMMENTS
1	1	2560-AS.BS Barrel, Spinner Grip	AS-Top/BS-Bott.
2	1	5A049A Rod, Spinner Grip	
3	1	70017 Piston, Spinner Grip	
4	1	25000 Seal Retainer, Spinner Grip	
5	1	SL Stover Nut 3.4-16, Spinner Grip Cyl.	
6	2	002-138 Piston Seal, Spinner Grip Cyl.	*
7	1	1870-1250-312B Rod Seal	*
8	1	SHD-1250 Rod Wiper, Spinner Grip Cyl.	*
9	1	2-228-90 O Ring	*
10	1	8-228 Back Up, Spinner Grip Cyl.	*
11	1	2-016-90 O Ring, Spinner Grip Cyl.	*
12	2	1103K1 Grease Fitting, Straight	

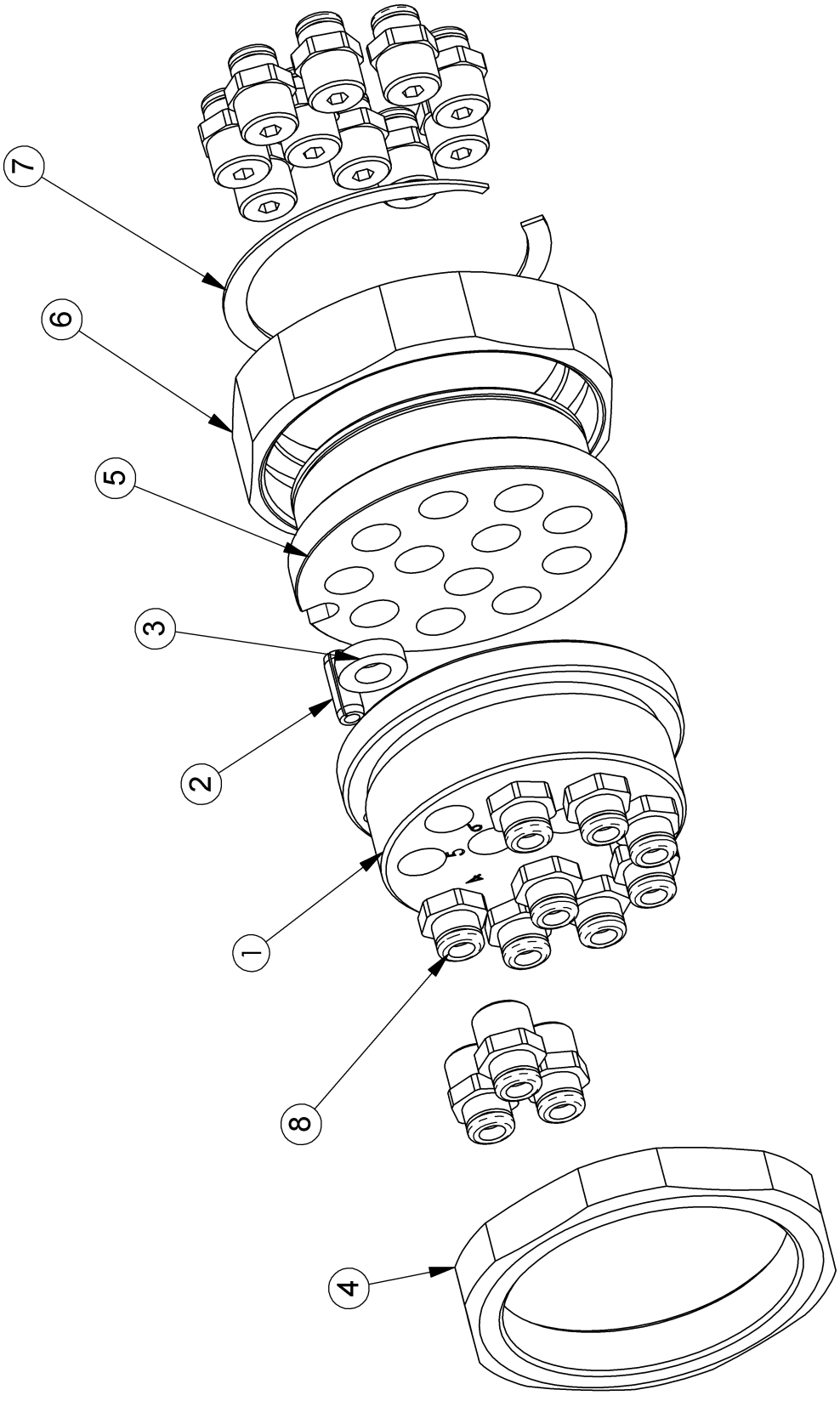
59R Roller Assembly, Winch



59R Roller Assembly, Winch

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	H59R-1 Roller Body	
2	2	H59R-2B Roller, Long w Bushing	
3	2	H59R-2A Roller, Short w Bushing	
4	2	H59R-1BZ Axle Shaft, Long	
5	4	H59R-1AZ Axle Shaft, Short	
6	6	1103K1 Grease Fitting, Straight	

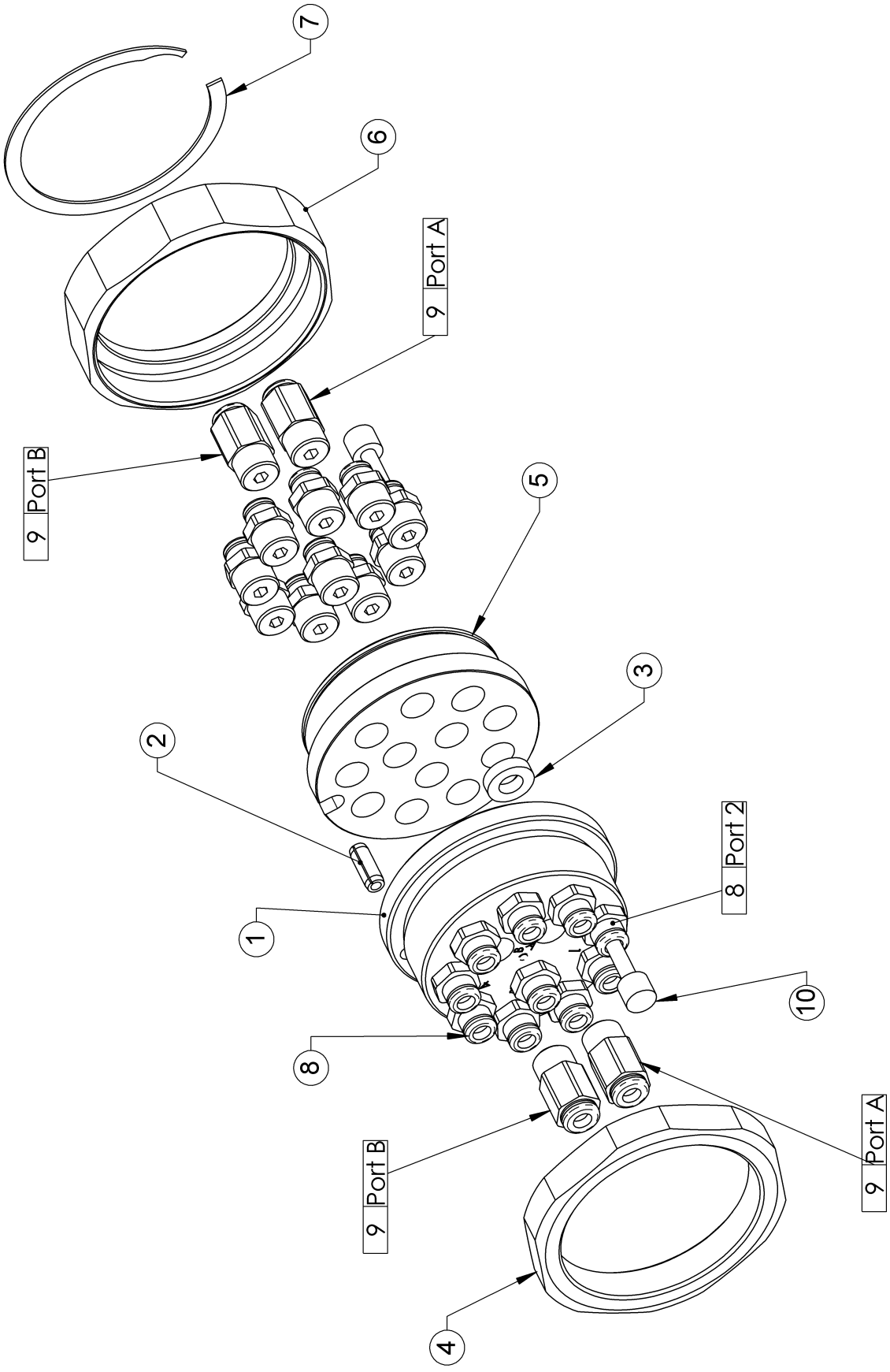
A11-1LCH Multiplex Connector Assembly



A11-1LCH Multiplex Connector Assembly

ITEM NO.	QTY./THIS ASSY	PART NO./ DESCRIPTION	COMMENTS
1	1	70033 Male Coupler	
2	1	807512_3.16 x .50lg. Roll Pin	
3	12	90130A029 Rubber Washer Seal	
4	1	70031 Panel Nut	
5	1	70051 Female Coupler	
6	1	70044 Swivel Nut	
7	1	US-206-S Retainer Ring	
8	21	A27 5.32 x 1.8 PTC Str. Fitting	

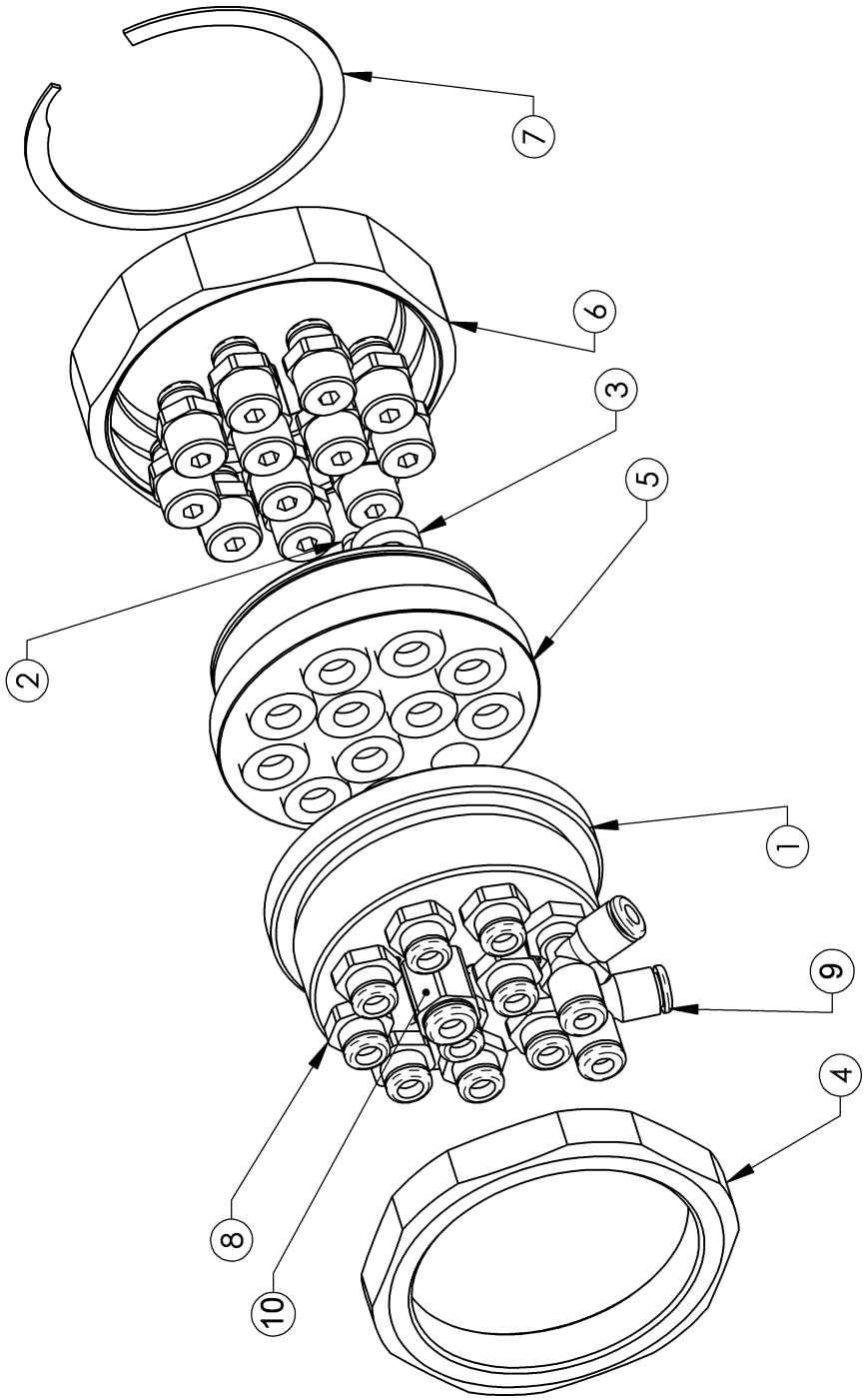
A11-2RCH Multiplex Connector Assembly



A11-2RCH Multiplex Connector Assembly

ITEM NO.	QTY.THIS ASSY	PART NO./ DESCRIPTION	COMMENTS
1	1	70033 Male Coupler	
2	1	807512_3.16 x .50lg. Roll Pin	
3	12	90130A029 Rubber Washer Seal	
4	1	70031 Panel Nut	
5	1	70051 Female Coupler	
6	1	70044 Swivel Nut	
7	1	US-206-S Retainer Ring	
8	20	A27 5.32 x 1.8 PTC Str. Fitting	
9	4	A49 3.16 x 1.8 PTC Str. Fitting	
10	2	A36 Port Plug	

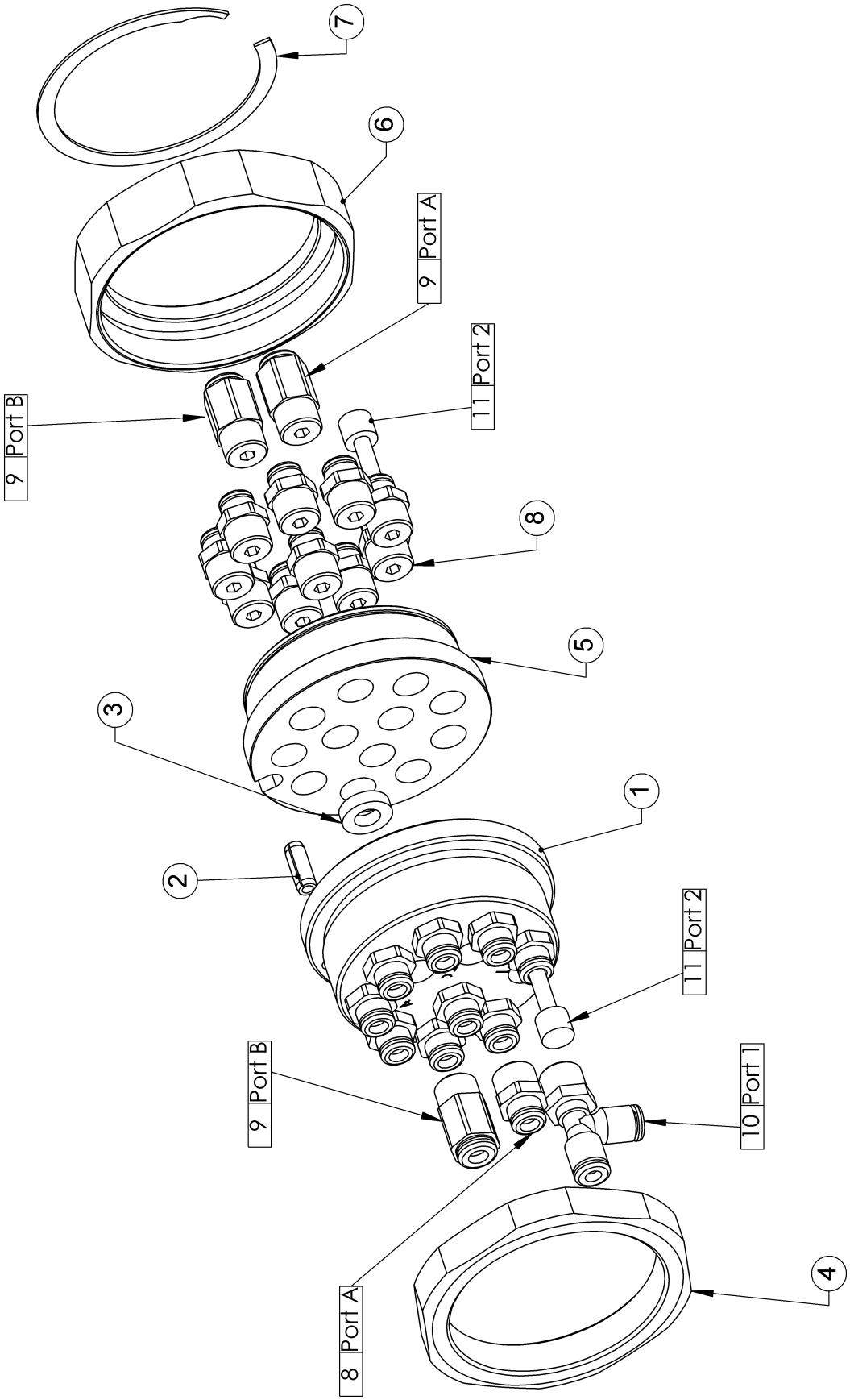
A11-LCH Multiplex Connector



A11-LCH Multiplex Connector

ITEM NO.	QTY./THIS ASSY.	PART NO./ DESCRIPTION	COMMENTS
1	1	70033 Male Coupler	
2	1	807512_3.16 x .50lg. Roll Pin	
3	12	90130A029 Rubber Washer Seal	
4	1	70031 Panel Nut	
5	1	70051 Female Coupler	
6	1	70044 Swivel Nut	
7	1	US-206-S Retainer Ring	
8	20	A27 5.32 x 1.8 PTC Str. Fitting	
9	2	A28 5.32 x 1.8 PTC Male Run T	
10	2	A49 3.16 x 1.8 PTC Str. Fitting	

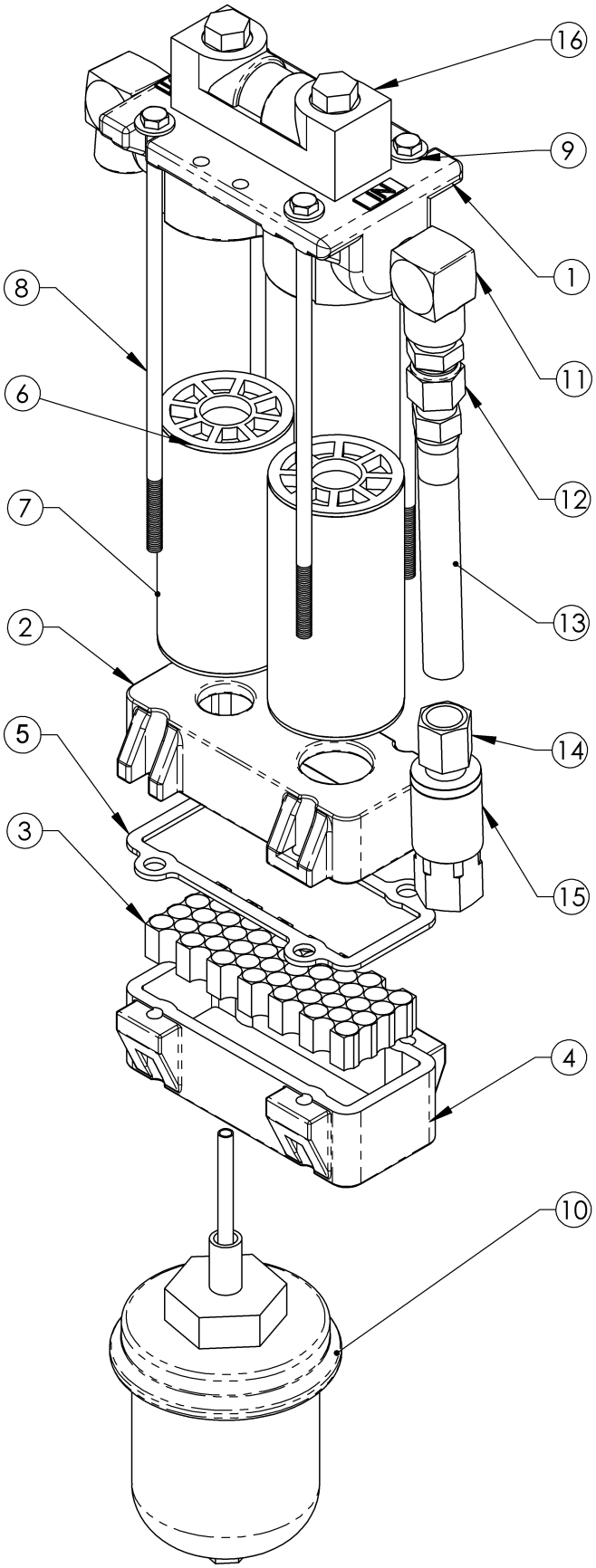
A11-RCH Multiplex Connector



A11-RCH Multiplex Connector

ITEM NO.	QTY.THIS ASSY.	PART NO./ DESCRIPTION	COMMENTS
1	1	70033 Male Coupler	
2	1	807512_3.16 x .50lg. Roll Pin	
3	12	90130A029 Rubber Washer Seal	
4	1	70031 Panel Nut	
5	1	70051 Female Coupler	
6	1	70044 Swivel Nut	
7	1	US-206-S Retainer Ring	
8	20	A27 5.32 x 1.8 PTC Str. Fitting	
9	3	A49 3.16 x 1.8 PTC Str. Fitting	
10	1	A28 5.32 x 1.8 PTC Male Run T	
11	2	A36 Port Plug	

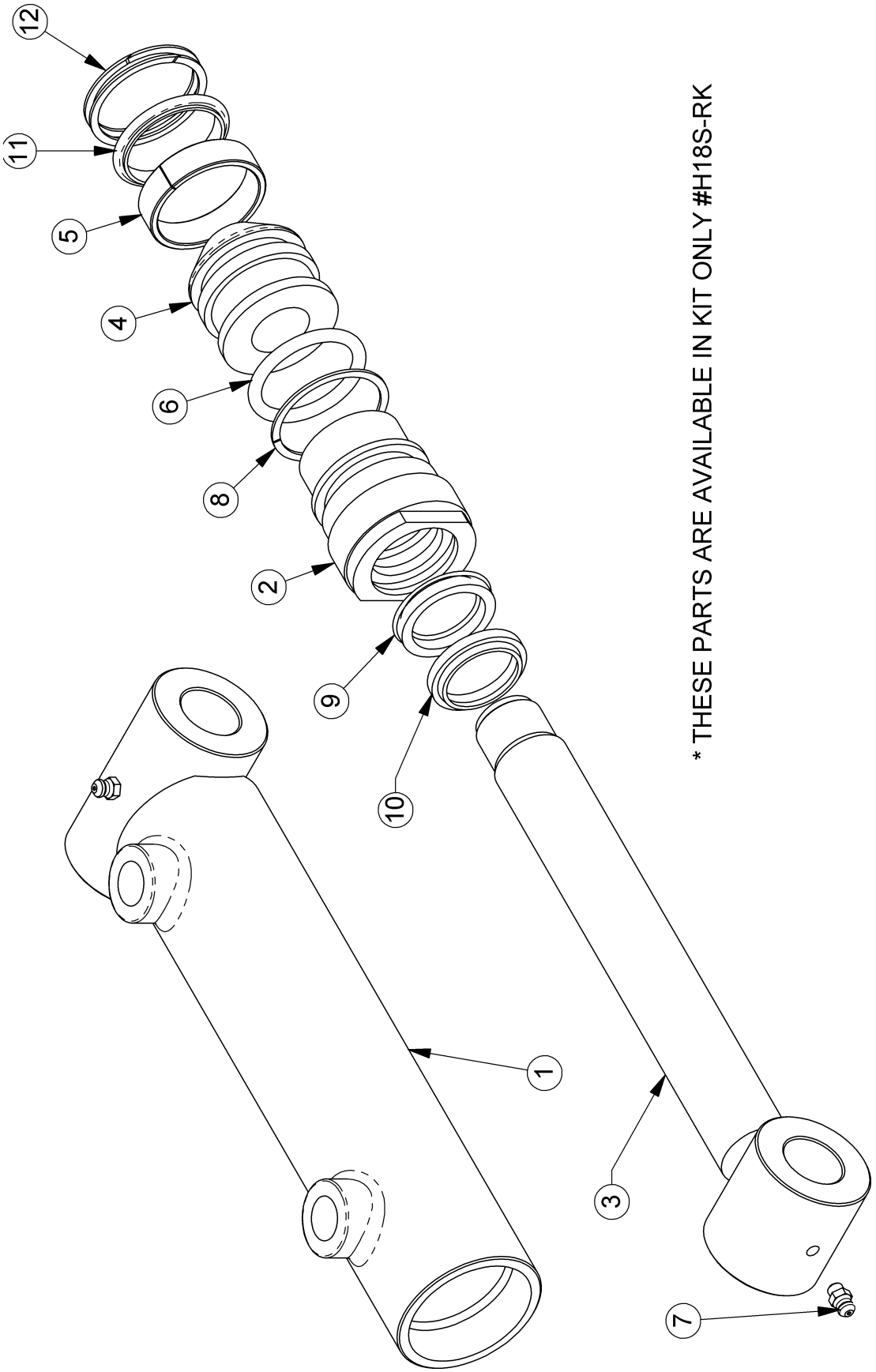
A22 On Board Air Filter Assembly



A22 On Board Air Filter Assembly

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	A22 Top Cover, Air Filter	Not Spare part
2	1	A22 Base Top, Air Filter	Not Spare part
3	1	A22H Base Core, Air Filter	
4	1	A22E Base, Air Filter	
5	1	A22D Gasket, Air Filter	
6	4	A22 Star Spacer, Air Filter	Not Spare part
7	2	A22B_C Filter Cartrige, Air Filter	
8	4	A22F Corner Bolt, Air Filter	
9	4	810557_3.16 Flat Washer	Not Spare part
10	1	A22A Float Drain, Air Filter	
11	2	2089-4-4S_-4MNPT x-4FNPT Fitting 90 Elbow	
12	1	2045-4-4S_-4MNPT x -4FNPT Fitting Str. Swivel	
13	1	HOS-29_1.4MNPTx1.4MNPTx204lg_1.4 Hose	
14	1	CP-20-B Male Quick Disconnect	
15	1	C-20-B Female Quick Disconnect	
16	1	A22I Indicator, Air Filter	

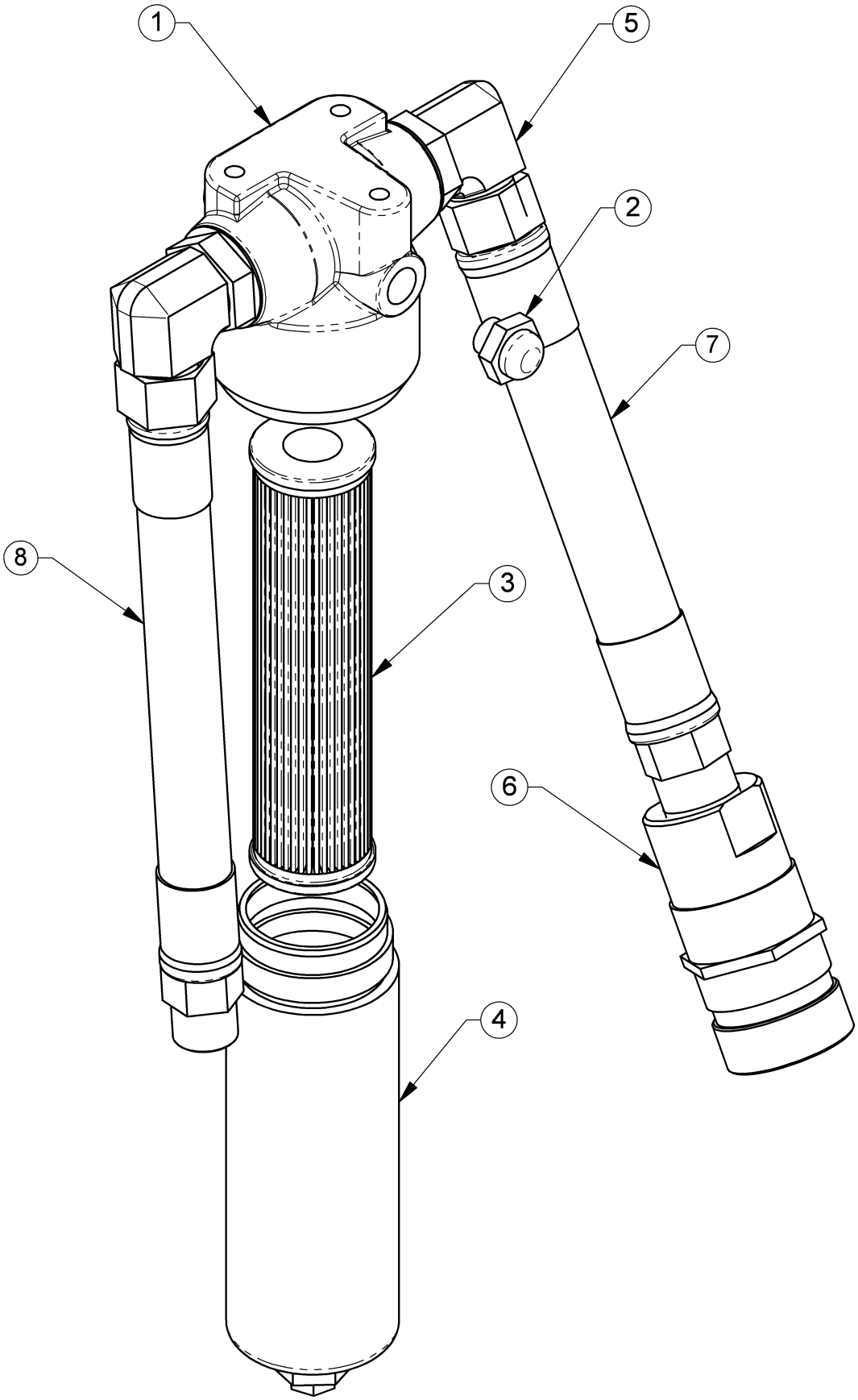
H18S Grip Tilt Cylinder Assembly



H18S Grip Tilt Cylinder Assembly

ITEM NO.	QTY./THIS ASSY	PART NO./ DESCRIPTION	COMMENTS
1	1	H18S-3 Barrel Assembly	
2	1	H18S-5 Seal Retainer	
3	1	H18S-6 Rod	
4	1	H18S-4 Piston	
5	1	H18S-RK-1 Wear Ring	*
6	1	H18S-RK-3 Static Seal	*
7	3	1103K1 Grease Fitting, Straight	
8	1	H18S-RK-4 Seal Backup	*
9	1	H18S-RK-5 Rod Seal	*
10	1	H18S-RK-6 Rod Wiper	*
11	1	H18S-RK-2 Piston Seal	*
12	2	H18S-RK-2A Backup, Piston Seal	*

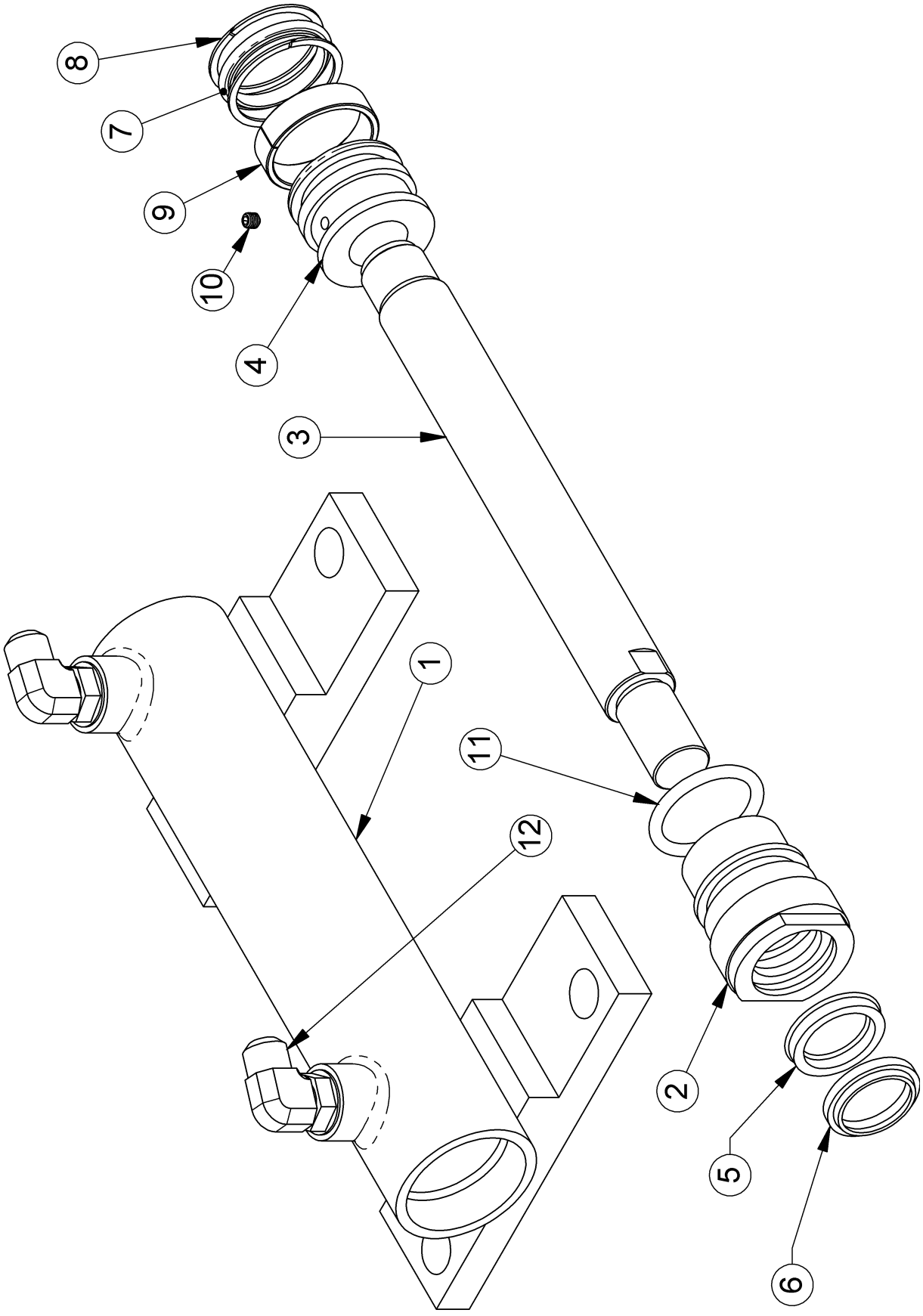
H25 Hydraulic Filter Assembly



H25 Hydraulic Filter Assembly

ITEM	QTY.	PART NO./DESC	PORT/DESC.	HOSE DESTINATION
1	1	Hydraulic Filter Body		
2	1	H25RC Indicator Fitting		
3	1	H25A Filter Element		
4	1	H25B Filter Canister		
5	2	2062-16-12S_16MORB x 12MJIC Fitting 90		
6	1	H52 Male Quick Disconnect		
7	1	HOS-1_1 MNPTx-12FJICx180.00lg_-16 Hose	Pressure Line, Power Unit	Right Port, Filter
8	1	HOS-112G_3.4MNPTx-12FJICx41.00lg_-12 Hose	Left Port, Filter	Main Press. Port, Man.

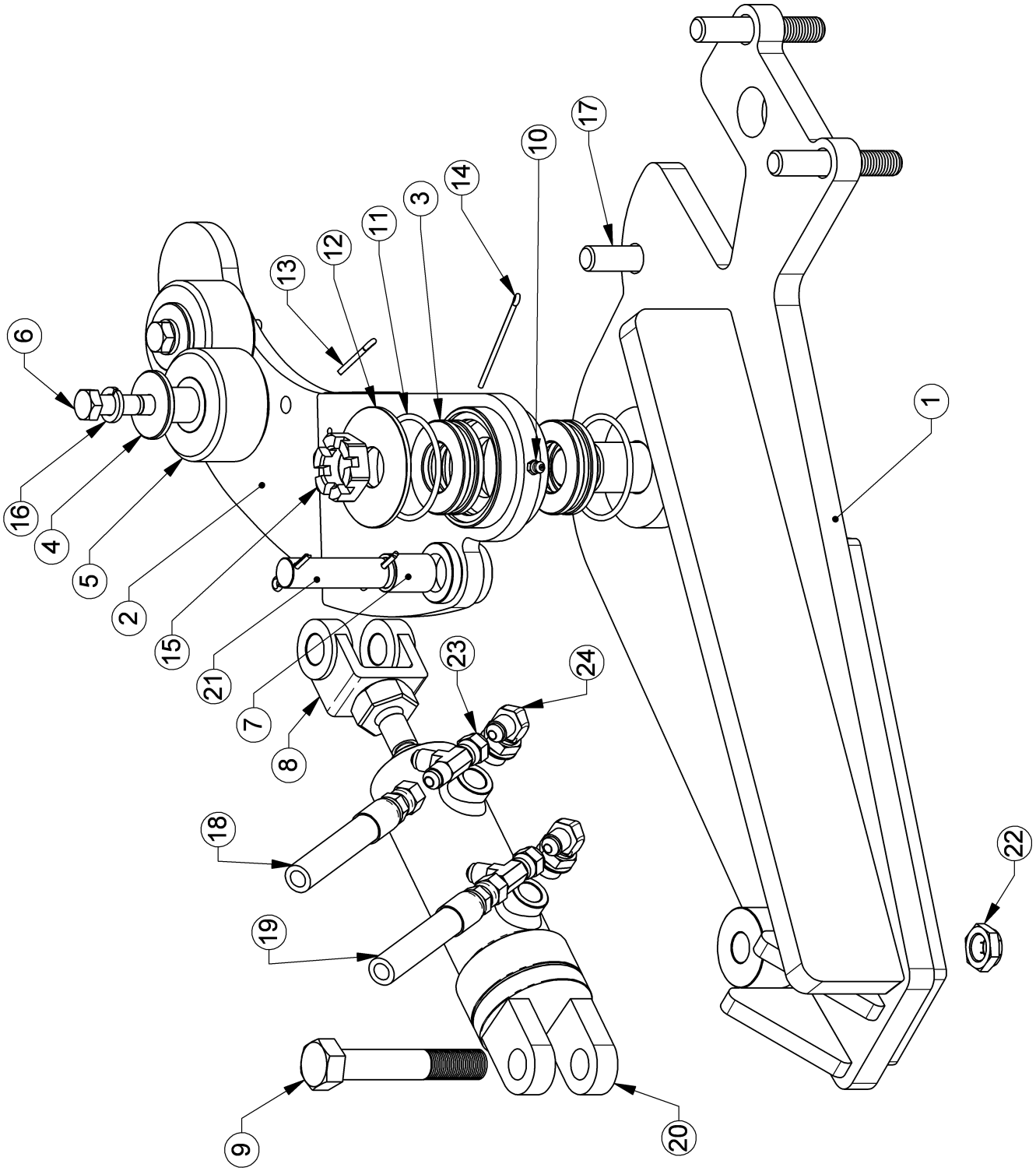
H37S-2 Push Cylinder Assembly



H37S-2 Push Cylinder Assembly

ITEM	QTY.	PART NO./ DESCRIPTION	COMMENTS
1	1	2006-10 Barrel	
2	1	2006-12 Seal Retainer	
3	1	2006-11 Rod	
4	1	2006-13 Piston	
5	1	1870-1250-312B Rod Seal	Repair Kit 061-H37S-2-RK
6	1	D-1250 Rod Wiper	Repair Kit 061-H37S-2-RK
7	1	TPO-24 Piston Seal	Repair Kit 061-H37S-2-RK
8	2	TPO-24 Backup, Piston Seal	Repair Kit 061-H37S-2-RK
9	1	MCD-2000-0500 Wear Ring	
10	1	2006-14 Piston Set Screw_1.4 x .25lg.	
11	1	2-326-90 O Ring	Repair Kit 061-H37S-2-RK
12	2	2062-8-8S_8MORB x 8MJIC Fitting 90	

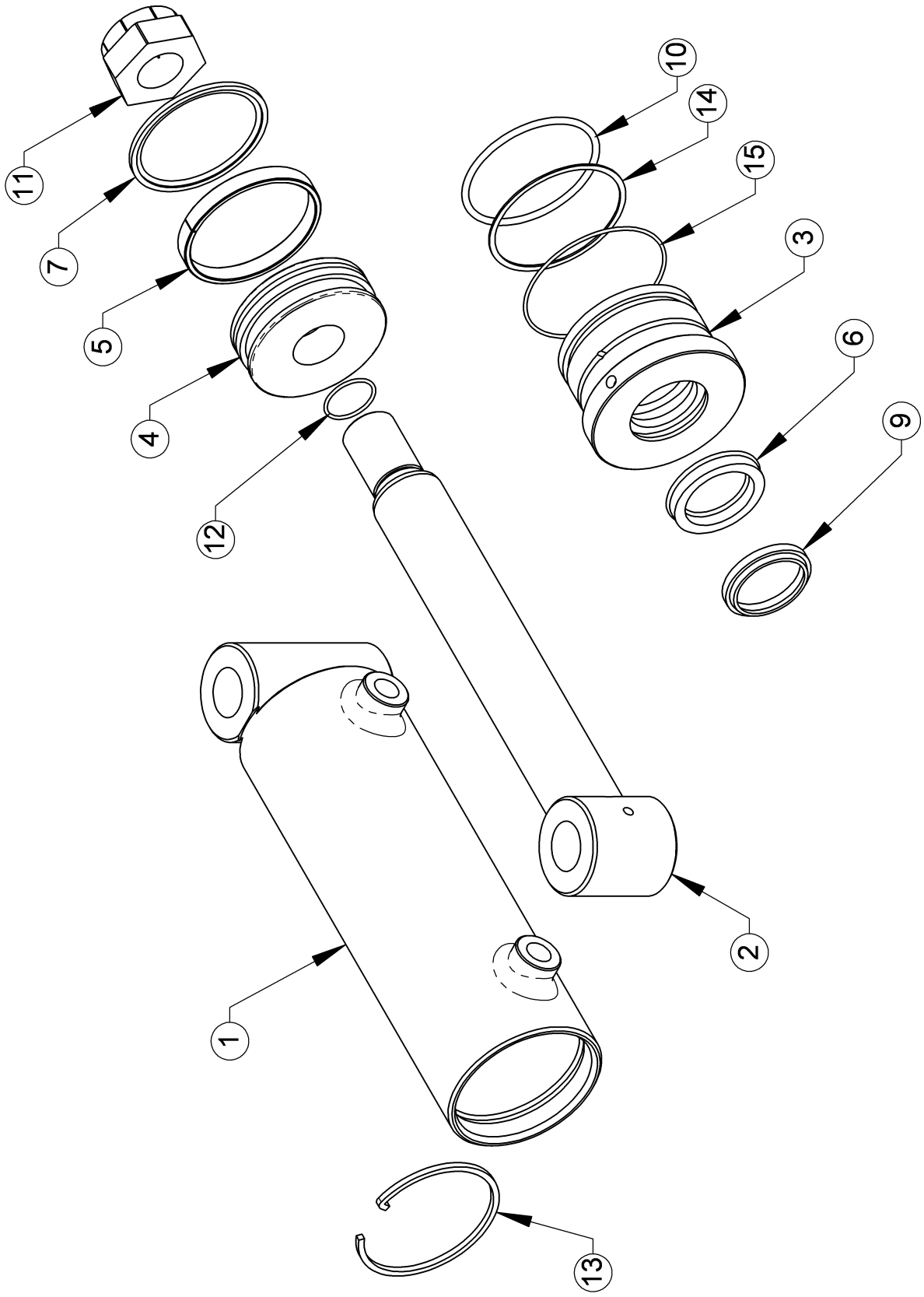
100K-2GSR Hydraulic Pipe Clamp



100K-2GSR Hydraulic Pipe Clamp

ITEM	QTY.	PART NO./DESCRIPTION	DESTINATION	COMMENTS
1	1	20045A-10 Mount Plate Wldmnt		
2	1	20045A-15 Stepped Hook Wldmnt		
3	2	146 Thrust Bearing Assembly		
4	2	20208 Spacer Bushing, Roller		
5	2	20210 Roller Assembly		
6	2	20045A-6 Bolt, Roller Assy 1.5-13 x 2.75		
7	1	20045A-2 Bushing		
8	1	62205K29 Clevis,Rod		
9	1	806542-1_3.4-16 x 4.50 Hex Bolt		
10	1	1103K1 Grease Fitting, Straight		
11	2	PRP568-229 O Ring		
12	1	20029-1 Washer		
13	4	807493-125 Cotter Pin SST		
14	1	807493-250 Cotter Pin		
15	1	20229A Linkage Nut, Modified		
16	2	810703_1.2 Lock Washer		
17	3	20045A-24 Stud		
18	1	HOS-12G_-6FJICx-6FJICx85.00lg. Hose	Mid. Grip Cyl. Rod Side	
19	1	HOS-152G_-6FJICx-6FJICx75.00lg. Hose	Mid. Grip Cyl. Cap Side	
20	1	HV50R2NA Cylinder, SR		
21	1	62205K22 Pin		
22	1	806523_3.4-16 Flex Nut (31FK1216)		
23	2	203102-6-6S T Fitting		
24	2	2062-8-6S_6MORB x 4MJIC Fitting 90		

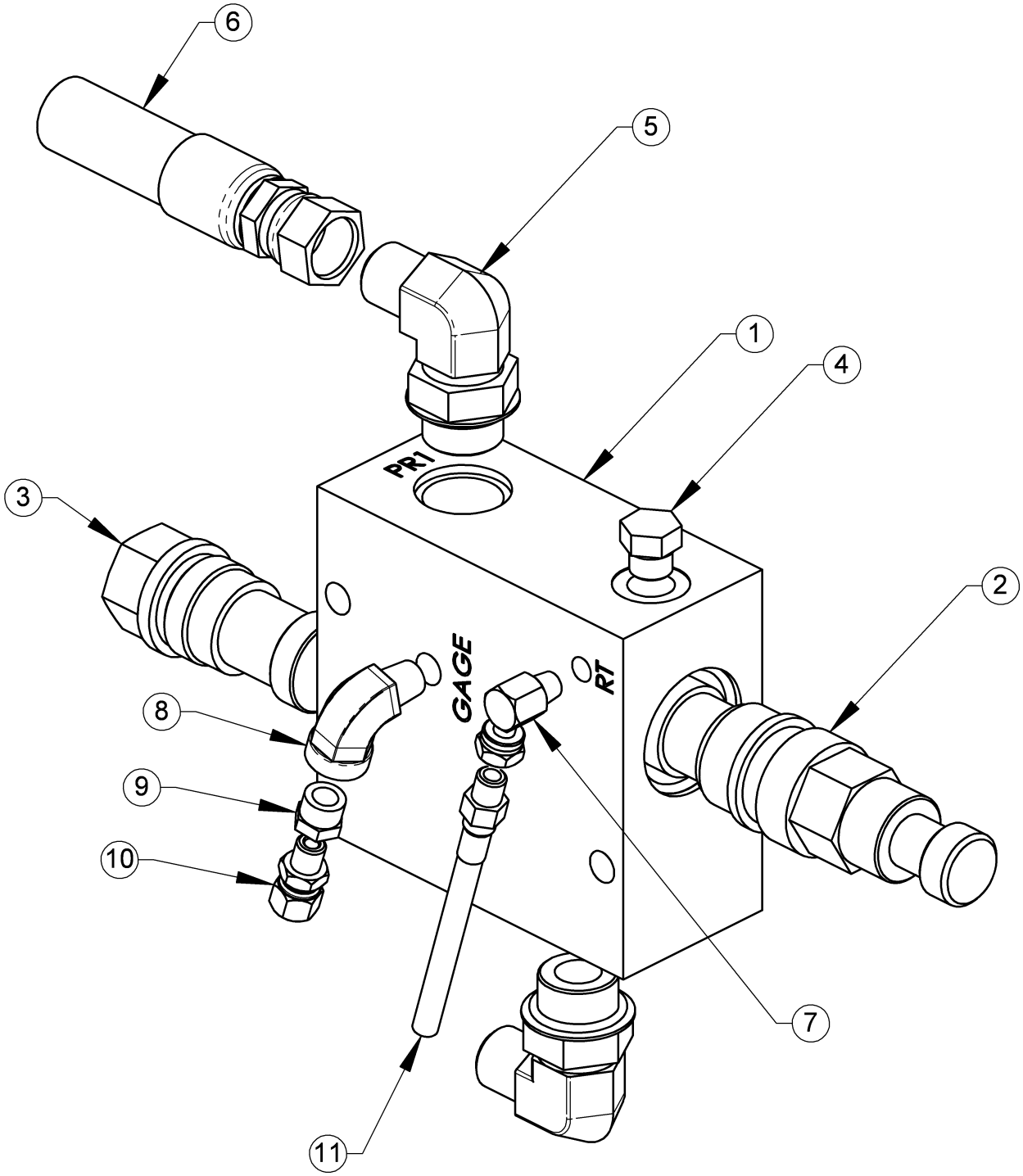
100K-2GSR H18 Top Grip Cylinder



100K-2GSR H18 Top Grip Cylinder

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
1	1	4E550A Grip Cylinder Tube	
2	1	5A223A Rod	
3	1	74005 Rod Head	
4	1	73384 Piston	
5	1	32172 Wear Ring	*
6	1	10323 U Cup Seal	*
7	1	14251 Cap Seal	*
8	1	14252 O Ring	
9	1	10005 Rod Wiper	*
10	1	10042 O Ring	*
11	1	20010 Lock Nut	
12	1	10032 O Ring	*
13	1	20027 Retainer Ring, Grip Tilt Cyl.	
14	1	10072 Back Up	*
15	1	14752 O Ring	*

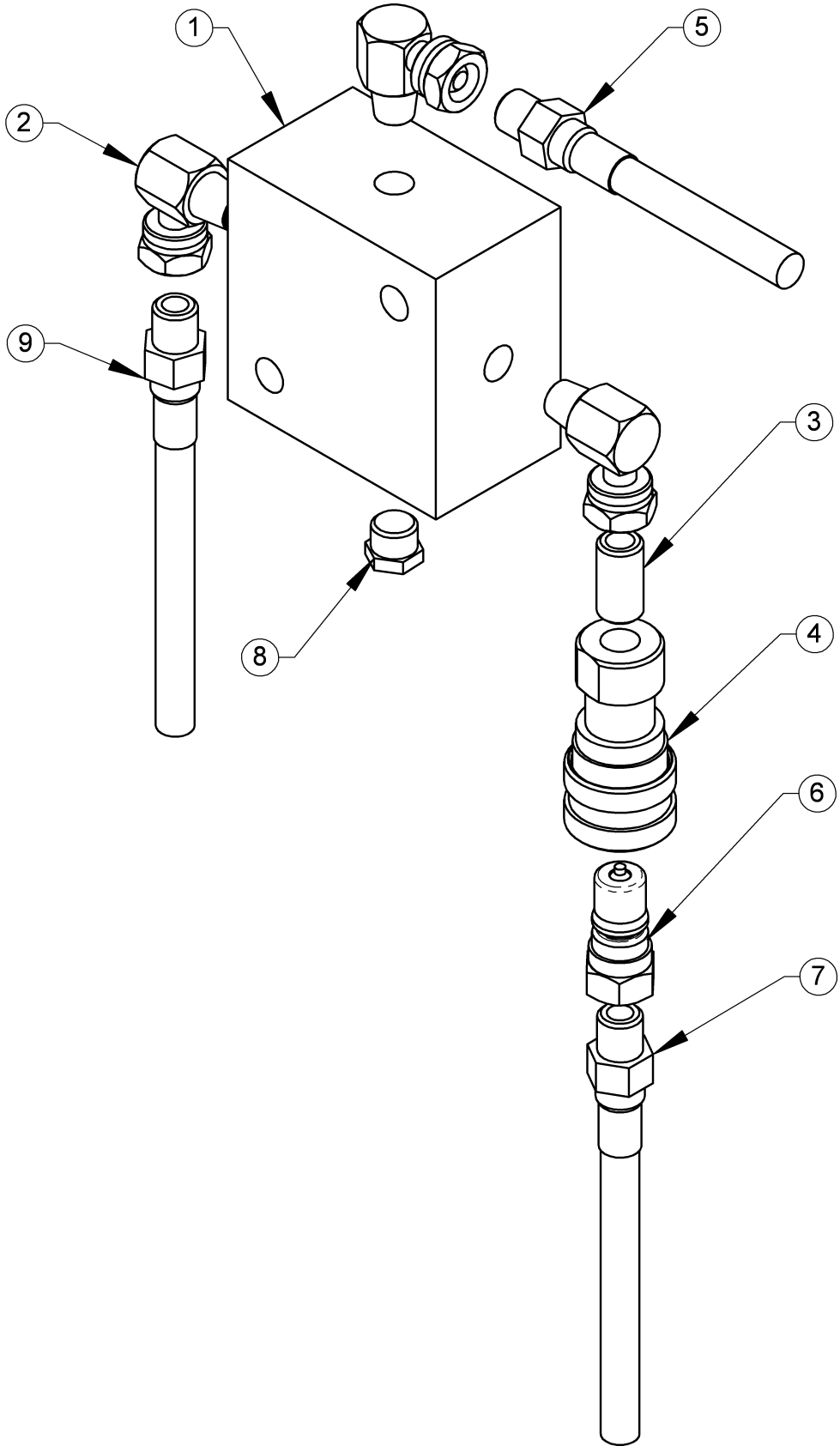
100K-2GSR Torque Manifold



100K-2GSR Torque Manifold

ITEM	QTY.	PART NO./DESC	PORT/DESC.	HOSE DESTINATION
1	1	20222 Torque Control Block, Modification		
2	1	J55A Torque Control Valve Assembly		
3	1	CXGD-XBN Check Valve		
4	1	900598-6S_MORB Plug		
5	2	2062-12-10S_12MORB x 10MJIC Fitting 90		
6	1	HOS-6A_-10FJICx-10FJICx87.00lg. Hose	PR1	Piston-Torque Cyl.
7	1	2047-2-2S 2MNPTX2FNPT Fitting 90 Drg Swivel		
8	1	30113 Orifice Fitting		
9	1	2081-4-2S 1.4 x 1.8 H.P. Hex Bushing		
10	1	2045-2-2S_2MNPT x 2FNPT Fitting Str. Swivel		
11	1	HOS-18A_1.8MNPTx1.8MNPTx50lg_1.8 Hose	GAGE-Torque Man	Gage Man. (See Explosion)

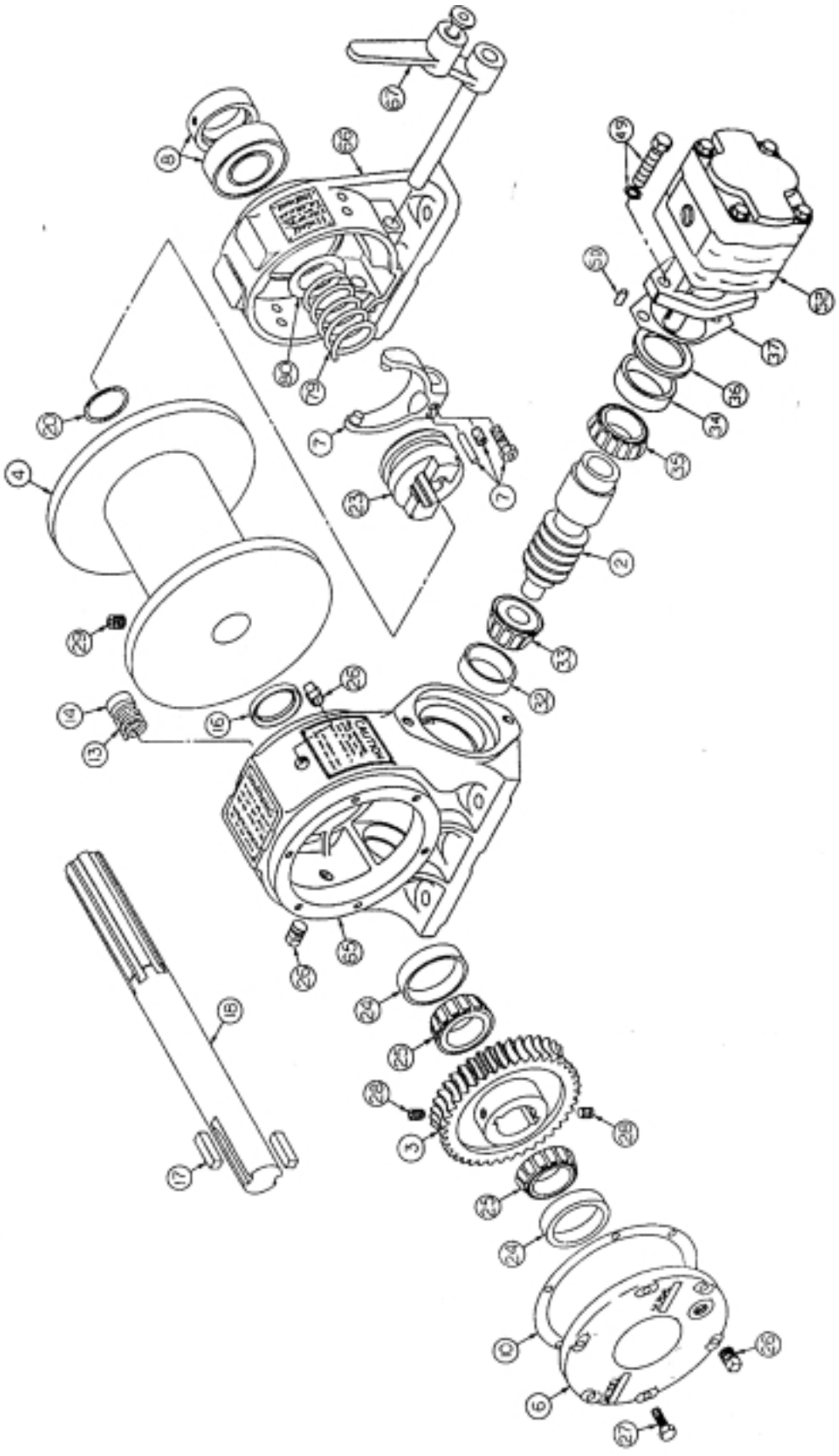
100K-2GSR Gage Manifold



100K-2GSR Gage Manifold

ITEM	QTY.	PART NO./DESC.	HOSE DESTINATION	COMMENTS
1	1	20275 Gage Manifold		
2	3	2047-2-2S 2MNPTX2FNPT Fitting 90 Drg Swivel		
3	1	2084-2S-3.4 Nipple, Hydraulic Plated		
4	1	H40F Hydraulic Q.D. Socket		
5	1	HOS-32_1.8MNPTx1.8MNPTx17.00lg_1.8 Hose	Gage	
6	1	H40M Hydraulic Q.D. Plug		
7	1	JHOS-OIL 1.8MNPTx1.8MNPTx83lg_1.8 Hose	Top Port, Torque Cyl. Block	
8	1	2082-2S_1.8 Pipe Plug		
9	1	HOS-18A_1.8MNPTx1.8MNPTx50lg_1.8 Hose	GAGE Port, Torque Cntr. Block	

100K-2GSR Winch Assembly



100K-2GSR Winch Assembly

ITEM	QTY.	PART NO./DESCRIPTION	COMMENTS
2	1	061-W202-2-25 Worm Shaft	
3	1	061-W203-2-25 Bronze Gear	
4	1	061-W204 Drum	
6	1	061-W206 Gear Case Cover	
7	1	061-W207-K Yoke Kit	
8	1	061-W208 End Bearing	
10	1	061-W210-K Gear Case Cover Gasket Kit	
13	1	061-W213 Spring	
14	1	061-W214 Friction Block	
16	1	061-W216 Oil Seal	
17	2	061-W217 Key	
18	1	061-W218 Drum Shaft	
20	1	061-W220 Retaining Ring	
23	1	061-W223 Clutch Dog	
24	2	061-W224 Bearing Cap	
25	2	061-W225 Bearing Cone	
26	3	061-W226 Pipe Plug	
27	6	061-W227 Ht Cap Screw	
28	2	061-W228 Socket Set Screw	
29	1	061-W229 Socket Set Screw	
32	1	061-W232 Bearing Cap	
33	1	061-W233 Bearing Cone	
34	1	061-W234 Bearing Cap	
35	1	061-W235 Bearing Cone	
36	1	061-W255 Wide Spacer	
37	1	061-W237-K Motor Gasket Kit	
49	2	061-W249 Hex Head Screw	
50	1	061-4369 Key	
52	1	061-3847 Motor	
65	1	061-W265 Gear Case	
66	1	061-W266 Clutch Housing	
67	1	061-W267 Clutch Lever	
79	1	061-W279 Spring	
80	1	061-W280 Washer	

NOTE

When ordering winch parts, specify Serial No. and Model stamped on winch cover.

Notes

Maintenance Schedule

HAWK INDUSTRIES, INC.

HAWKJAW® RECOMMENDED MAINTENANCE CHECKLIST

Hawkjaw S/N: Rig Name:_____ Maintenance Check Date:

Pipe Size:

A TICK SHOWN IN THE CLEAR CELLS, WILL INDICATE THE ITEM WAS FOUND TO BE ACCEPTABLE

PLACE A TICK IN THE APPROPRIATE BOX ON THE RIGHT

	Daily	Wkly	1 Mo	6 Mo	1 Yr	2 Yrs	Shop
Overall Visual Inspection							
CHECK THAT EMERGENCY STOP BUTTONS ARE OPERATIONAL							
Check all cables for broken strands							
Check pipe stop assy & indicator screws							
Check that die holders are greased and swiveling							
Check level of Middle Wrench for bearing wear							
Check for wear and grease dies							
Check for Hydraulic plumbing leaks							
Check spinner chain and grease (spray)							
Check Low Torque warning system							
Check Torque readings							
Activate & grease all wrench adjustment nuts							
Check & grease pivot pins behind adjustment nuts							
Check adjustment of spinner push cyl. & tightness of mounting bolts							
Check Hydraulic filter (Red button:IN)							
Remove & check all pivot pins, sleeves & sleeve keepers							
Check angle brackets							
Check all Grip Cyl mount bolts							
Check all linkage mount pins							
Check bolts on Stand Assy							
Check hoses on spinner assy							
Check die rollers & holders for position +hardware							
Check & grease spinner slide block							
Apply grease to all grease fittings & check if in place							
Check quick release pins on die holders							
Check wear grooves on spinner rollers							
PERFORM FUNCTION TEST							
Check ball thrust bearings							
Check spinner reducer bearing							
Check spinner push rod coupler							
Check level of spinner							
Check cylinder bumper							
Check winch oil level							
Check spinner gearbox oil level							
Check spinner mount thrust bearings							
Drain water seperator in air system							
Check tightness of all bolts & castle nuts							
Check all castle nuts for cotter pins							
Clean air filter dryers							
Check grip pressure (1000psi)							
Rotate Hooks							
Check welds on all Jaw Plates							
Change Spinner Reducer Oil (10W)							
Change Winch Gear Case Oil (90W)							
MPI, All Hook Threads (retest 12 mos) EXP DATE:							
MPI, Angle Brackets (retest 12 mos) EXP DATE:							
MPI, Hanger Assy (retest 12 mos) EXP DATE:							
Replace Bolt (p/n806510)& Nut (p/n806503) on Hanger Assy							
Remove & clean all end caps on BOSCH valves							
Torque Gauge Calibration:Next Calib. Date:_____S/N:_____							

Maintenance Inspection by:_____Workshop Supervisor's approval:_____